

# SEQUENCE LISTING

<110> SUBTIL-SANDS, AGATHE  
DAUTRY-VARSAT, ALICE

<120> SECRETED CHLAMYDIA POLYPEPTIDES, POLYNUCLEOTIDES CODING THEREFOR,  
THERAPEUTIC AND DIAGNOSTIC USES THEREOF

<130> 249179US0

<150> US 60/448,879

<151> 2003-02-24

<160> 378

<170> PatentIn version 3.1

<210> 1

<211> 1203

<212> DNA

<213> Chlamydia pneumoniae

<400> 1

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| gcaatctatg ctgccgattc ccaatccgta tcctttccag aacaacttcc ctcttcattt  | 120 |
| actggagaaa ttaagggaaa ccacgtacgg atgcgtctag cacctcatac tgatgggacc  | 180 |
| atcattaggg aattttctaa aggagatctt gttgctgtta tcggagaaag caaagactac  | 240 |
| tacgtaattt ctgcgcctcc aggaattaca ggttatgtgt tccgctcatt tgtttttagat | 300 |
| aatgtcgttg aaggtgaaca agtcaatggt cgtttagaac cctcaacatc agctccagta  | 360 |
| cttgtgagac tctcccgagg cacacaaata cagccagctt ctcaagagcc acatgggaaa  | 420 |
| tggttagagg tggctctgcc ctcaaatgc gtattctatg ttgcaaaaaa ctttgttgct   | 480 |
| aacaaaggac ccatcgagct gtatacgcaa cgcgagggac aaaaaaagat tgccatggac  | 540 |
| cttatcaatt ctgctttaaa ctttgctcat atagagcttg agaaaagcct caatgagatt  | 600 |
| gatctggaag caatttataa aaagatcaac cttgtacaat ccgaagagtt taaagatggt  | 660 |
| ccaggaattc aagggcttat acaaaaagct ttagaagaaa tccaagatgc ctatctttct  | 720 |
| aaatctctag aatctcaaaa tacttcgatt gcaagctcac aatgttccac tcctaagggt  | 780 |
| tcttcttctg aagttacaac ttcattactt tcacgtcata ttcgtaagca aactgcatta  | 840 |
| aaaacagctc ctcttaccga aggaagagaa aacctagagt attctctctt cagaatctgg  | 900 |
| gccagtatgc agcaaggcaa tgaccactct gaagcactaa cacaagaagc gttttatcgc  | 960 |

gctgaacaga agaaaaaaca agtgcttgcg ggtgtattag aagtgtatcc tcatgtagta 1020  
aagaacaatc ccggggatta cctactaaaa gctcaggaaa acacgattgc ttttctttac 1080  
ggtacaagta tcaacttaga gcaatggta ggaaagcgtg tcaactgtgga atgtctccca 1140  
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<210> 2  
<211> 310  
<212> PRT  
<213> Chlamydia pneumoniae  
<400> 2

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Met | Leu | Gln | Ile | Ser | Met | Leu | Leu | Leu | Ala | Leu | Gly | Thr | Ala |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ile | Asn | Ser | Pro | Ala | Ile | Tyr | Ala | Ala | Asp | Ser | Gln | Ser | Val | Ser | Phe |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Pro | Val | Leu | Leu | Gly | Leu | Gly | Gln | Asp | Lys | Phe | Leu | Lys | Ala | Thr | Glu |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Asp | Glu | Asp | Val | Leu | Phe | Glu | Ser | Gln | Lys | Ala | Ile | Asp | Ala | Trp | Asn |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Leu | Leu | Thr | Lys | Ala | Arg | Asp | Val | Leu | Gly | Leu | Gly | Asp | Ile | Gly |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Ile | Tyr | Gln | Thr | Ile | Glu | Phe | Leu | Gly | Ala | Tyr | Leu | Ser | Lys | Val |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Asn | Arg | Arg | Ala | Phe | Cys | Ile | Ala | Ser | Glu | Ile | His | Phe | Leu | Lys | Thr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Ile | Arg | Asp | Leu | Asn | Ala | Tyr | Tyr | Leu | Leu | Asp | Phe | Arg | Trp | Pro |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Leu | Cys | Lys | Ile | Glu | Glu | Phe | Val | Asp | Trp | Gly | Asn | Asp | Cys | Val | Glu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |

Ile Ala Lys Arg Lys Leu Cys Thr Phe Glu Lys Glu Thr Lys Glu Leu  
 145 150 155 160

Asn Glu Ser Leu Leu Arg Glu Glu His Ala Met Glu Lys Cys Ser Ile  
 165 170 175

Gln Asp Leu Gln Arg Lys Leu Ser Asp Ile Ile Ile Glu Leu His Asp  
 180 185 190

Val Ser Leu Phe Cys Phe Ser Lys Thr Pro Ser Gln Glu Glu Tyr Gln  
 195 200 205

Lys Asp Cys Leu Tyr Gln Ser Arg Leu Arg Tyr Leu Leu Leu Tyr  
 210 215 220

Glu Tyr Thr Leu Leu Cys Lys Thr Ser Thr Asp Phe Gln Glu Gln Ala  
 225 230 235 240

Arg Ala Lys Glu Glu Phe Ile Arg Glu Lys Phe Ser Leu Leu Glu Leu  
 245 250 255

Glu Lys Gly Ile Lys Gln Thr Lys Glu Leu Glu Phe Ala Ile Ala Lys  
 260 265 270

Ser Lys Leu Glu Arg Gly Cys Leu Val Met Arg Lys Tyr Glu Ala Ala  
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Ala Lys His Ser Leu Asp Ser Met Phe Glu Glu Glu Thr Val Lys Ser  
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Pro Arg Lys Asp Thr Glu  
 305 310

<210> 3  
 <211> 756  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 3  
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| aggggaagcta tagaagcggc tattgttaaa caaatgcaaa ttacgcctta tttactgcat  | 120 |
| attttacacg acgctactca ggcgcgtccct gagattgtaa atgatgggag ttatcaaggt  | 180 |
| cacctctatg ccatgtatct cctcgcacaa ttcagagaaa gtcgcgcact ccctctcatc   | 240 |
| attaaactct ttgcatttga agatgatact ccacacgcaa tagcaggtga tgtcctaacc   | 300 |
| gaagatctgc ctaggatacct agctagcgtc tgcaatgatg actcgctaata taaagagctc | 360 |
| atagaaactc caaaaatcaa tccttatgtg aaggcagccg caatctctgg tcttgtaact   | 420 |
| cttgtaggag ccgggaaaat tcctagggat aaagttatcc gttattttgc agaacttcta   | 480 |
| aactatagat tagaaaaaca gccctcgttc gcttgggata acctaatcgc agggatctgt   | 540 |
| actctttacc ccggagagct cttctatcca ataagcaaag cctttgacgg aggacttggt   | 600 |
| gatacatctt tcatcagcat ggaagatgtc gaaaatatta tccacgaaga aaccgtggaa   | 660 |
| tcttgtatcc ataccctctg ttcttctaca gaactcatta atgacactct agaagaaatg   | 720 |
| gaaaaatggg tagaagactt ccccatagaa ccgtga                             | 756 |

<210> 4  
 <211> 251  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 4

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Leu | Met | Asp | Ile | Ser | His | Ile | Leu | Glu | Asp | Leu | Ala | Tyr | Asp | Glu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Ile | Leu | Pro | Arg | Glu | Ala | Ile | Glu | Ala | Ala | Ile | Val | Lys | Gln | Met |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ile | Thr | Pro | Tyr | Leu | Leu | His | Ile | Leu | His | Asp | Ala | Thr | Gln | Arg |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Pro | Glu | Ile | Val | Asn | Asp | Gly | Ser | Tyr | Gln | Gly | His | Leu | Tyr | Ala |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Tyr | Leu | Leu | Ala | Gln | Phe | Arg | Glu | Ser | Arg | Ala | Leu | Pro | Leu | Ile |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

Ile Lys Leu Phe Ala Phe Glu Asp Asp Thr Pro His Ala Ile Ala Gly  
85 90 95

Asp Val Leu Thr Glu Asp Leu Pro Arg Ile Leu Ala Ser Val Cys Asn  
100 105 110

Asp Asp Ser Leu Ile Lys Glu Leu Ile Glu Thr Pro Lys Ile Asn Pro  
115 120 125

Tyr Val Lys Ala Ala Ala Ile Ser Gly Leu Val Thr Leu Val Gly Ala  
130 135 140

Gly Lys Ile Pro Arg Asp Lys Val Ile Arg Tyr Phe Ala Glu Leu Leu  
145 150 155 160

Asn Tyr Arg Leu Glu Lys Gln Pro Ser Phe Ala Trp Asp Asn Leu Ile  
165 170 175

Ala Gly Ile Cys Thr Leu Tyr Pro Gly Glu Leu Phe Tyr Pro Ile Ser  
180 185 190

Lys Ala Phe Asp Gly Gly Leu Val Asp Thr Ser Phe Ile Ser Met Glu  
195 200 205

Asp Val Glu Asn Ile Ile His Glu Glu Thr Val Glu Ser Cys Ile His  
210 215 220

Thr Leu Cys Ser Ser Thr Glu Leu Ile Asn Asp Thr Leu Glu Glu Met  
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Glu Lys Trp Leu Glu Asp Phe Pro Ile Glu Pro  
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<210> 5  
<211> 948  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 5  
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|--|-----|
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| ctcgggctgg gccaggacaa atttttaaaag gctacggaag atgaagatgt gctttttgag | 180 |
| tctcaaaaag caatcgatgc gtggaatgct ttattgacaa aagccagaga tgtttttaggt | 240 |
| cttgggggaca taggtgctat ctatcagact atagaattct tgggtgccta tttatcaaaa | 300 |
| gtgaatcggg gggctttttg tattgcttcg gagatacatt ttctaaaaac agcaatccga  | 360 |
| gatttgaatg catattacct gttagatttt agatggcctc tttgcaagat agaagagttt  | 420 |
| gtggattggg ggaatgattg tgttgaaata gcaaagagga agctatgcac ttttgaaaaa  | 480 |
| gaaaccaagg agctcaatga gagccttctt agagaggagc atgcatgga gaaatgctcg   | 540 |
| attcaagatc tgcaaaggaa acttagcgac attattattg aattgcatga tgtttctctt  | 600 |
| ttttgttttt ctaagactcc cagtcaagag gagtatcaaa aggattgttt gtatcaatca  | 660 |
| cgattgaggt acttattggt gctgtatgag tatacattgt tatgtaagac atccacagat  | 720 |
| tttcaagagc aggctagggc taaagaggag ttcattaggg agaaattcag ccttctagag  | 780 |
| ctcgaaaagg gaataaaaca aactaaagag cttgagtttg caattgctaa aagtaagtta  | 840 |
| gaacggggct gtttagttat gaggaagtat gaagctgccg ctaaacadag tttagattct  | 900 |
| atgttcgaag aagaaactgt gaagtcgccg cggaagagaca cagaataa              | 948 |

<210> 6  
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 <212> PRT  
 <213> *Chlamydia pneumoniae*  
 <400> 6

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Val | Glu | Leu | Glu | Ala | Leu | Lys | Arg | Glu | Phe | Ala | His | Leu | Lys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Gln | Lys | Pro | Thr | Ser | Asp | Gln | Glu | Ile | Thr | Ser | Leu | Tyr | Gln | Cys |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Asp | His | Leu | Glu | Phe | Val | Leu | Leu | Gly | Leu | Gly | Gln | Asp | Lys | Phe |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Lys | Ala | Thr | Glu | Asp | Glu | Asp | Val | Leu | Phe | Glu | Ser | Gln | Lys | Ala |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asp | Ala | Trp | Asn | Ala | Leu | Leu | Thr | Lys | Ala | Arg | Asp | Val | Leu | Gly | 65  | 70  | 75  | 80  |
| Leu | Gly | Asp | Ile | Gly | Ala | Ile | Tyr | Gln | Thr | Ile | Glu | Phe | Leu | Gly | Ala | 85  | 90  | 95  |     |
| Tyr | Leu | Ser | Lys | Val | Asn | Arg | Arg | Ala | Phe | Cys | Ile | Ala | Ser | Glu | Ile | 100 | 105 | 110 |     |
| His | Phe | Leu | Lys | Thr | Ala | Ile | Arg | Asp | Leu | Asn | Ala | Tyr | Tyr | Leu | Leu | 115 | 120 | 125 |     |
| Asp | Phe | Arg | Trp | Pro | Leu | Cys | Lys | Ile | Glu | Glu | Phe | Val | Asp | Trp | Gly | 130 | 135 | 140 |     |
| Asn | Asp | Cys | Val | Glu | Ile | Ala | Lys | Arg | Lys | Leu | Cys | Thr | Phe | Glu | Lys | 145 | 150 | 155 | 160 |
| Glu | Thr | Lys | Glu | Leu | Asn | Glu | Ser | Leu | Leu | Arg | Glu | Glu | His | Ala | Met | 165 | 170 | 175 |     |
| Glu | Lys | Cys | Ser | Ile | Gln | Asp | Leu | Gln | Arg | Lys | Leu | Ser | Asp | Ile | Ile | 180 | 185 | 190 |     |
| Ile | Glu | Leu | His | Asp | Val | Ser | Leu | Phe | Cys | Phe | Ser | Lys | Thr | Pro | Ser | 195 | 200 | 205 |     |
| Gln | Glu | Glu | Tyr | Gln | Lys | Asp | Cys | Leu | Tyr | Gln | Ser | Arg | Leu | Arg | Tyr | 210 | 215 | 220 |     |
| Leu | Leu | Leu | Leu | Tyr | Glu | Tyr | Thr | Leu | Leu | Cys | Lys | Thr | Ser | Thr | Asp | 225 | 230 | 235 | 240 |
| Phe | Gln | Glu | Gln | Ala | Arg | Ala | Lys | Glu | Glu | Phe | Ile | Arg | Glu | Lys | Phe | 245 | 250 | 255 |     |
| Ser | Leu | Leu | Glu | Leu | Glu | Lys | Gly | Ile | Lys | Gln | Thr | Lys | Glu | Leu | Glu | 260 | 265 | 270 |     |

Phe Ala Ile Ala Lys Ser Lys Leu Glu Arg Gly Cys Leu Val Met Arg  
 275 280 285

Lys Tyr Glu Ala Ala Ala Lys His Ser Leu Asp Ser Met Phe Glu Glu  
 290 295 300

Glu Thr Val Lys Ser Pro Arg Lys Asp Thr Glu  
 305 310 315

<210> 7  
 <211> 648  
 <212> DNA  
 <213> Chlamydia pneumoniae

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 actaaaggtg tgattgcat gcttcctgta tttcatcgcc caggaaagag tcttgaacct 180  
 ttaccttgga acctccaagg agaatttact gaagagatca gcaaaagggtt ttatgcttcg 240  
 gaaaagggtct tcttgatcaa gcacaatgct tcacctcaga cagtctctca gttctatgct 300  
 ccgattgcga atcgtctacc cgaaacaatt attgagcaat ttcttcctgc agaattcatt 360  
 gttgctacag aactggttaga acaaaagaca gggaaagaag cagggtgtcga ttctgtaaca 420  
 gcgtctgtac gtgttcgcgt ttttgatata cgtcatcata aaatagctct catttatcaa 480  
 gagattatcg aatgcagcca gcctttaact accctagtca atgattatca tcgctatggc 540  
 tggaactcaa aacattttga ttcaacgccc atgggcttaa tgcatagcgc tcttttccgc 600  
 gaagttgttg ccagagttga gggctatggt tgtgctaact actcgtag 648

<210> 8  
 <211> 173  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 8

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Thr Leu Ser Ser Cys Thr Ala Ile Thr Ser Ser Pro Gly Met Val Asn  
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 Leu Leu Ile Gly Trp Ala Lys Thr Lys Phe Ile Gln Pro Ile Arg Glu  
 35 40 45  
 Ser Lys Leu Phe Gln Ser Arg Ala Cys Gln Ile Thr Leu Leu Val Leu  
 50 55 60  
 Gly Ile Leu Leu Val Val Ala Gly Leu Ala Cys Met Phe Ile Phe His  
 65 70 75 80  
 Ser Gln Leu Gly Ala Asn Ala Phe Trp Leu Ile Ile Pro Ala Ala Ile  
 85 90 95  
 Gly Leu Ile Lys Leu Leu Val Thr Ser Leu Cys Phe Asp Glu Ala Cys  
 100 105 110  
 Thr Ser Glu Lys Leu Met Val Phe Gln Lys Trp Ala Gly Val Leu Glu  
 115 120 125  
 Asp Gln Leu Asp Asp Gly Ile Leu Asn Asn Ser Asn Lys Ile Phe Gly  
 130 135 140  
 His Val Lys Thr Glu Gly Asn Thr Ser Arg Ala Thr Thr Pro Val Leu  
 145 150 155 160  
 Asn Asp Gly Arg Gly Thr Pro Val Leu Ser Pro Leu Val  
 165 170

<210> 9  
 <211> 777  
 <212> DNA  
 <213> Chlamydia pneumoniae

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 tctgcagttc aagggttttct tcaaactgga ggagctgcct cctctacagc gacaactact 180

accgcatccg gagcctctgc attaggactt tcacctgac aagtgcaagc gttgcttact 240  
 aatttattaa atgtgggaca accatcagtg ggacaaccat caacttcagc aggaacttcg 300  
 ggagcctcct cttccagtgc aagtatgcag caacagcttt tgcaacttat cttagacaag 360  
 acaacaggaa gtggcggatc gtccgtgagt tcagagcaat tacagcaact ccttagcttg 420  
 gtgagccaga tgactacgtc tcaaggagga agtggtggaa ctcaggcagg acaggccgct 480  
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 gctgcatcgt tggcacagat catttatgca gcagtaacaa gtcctggagc aaagaaaact 600  
 agcgaatddd gttataatta ttgtggagag acctgccaaag gcaactgcgg ttgtcctacc 660  
 tgtggctgtc cagacggaca gtgcggttgt ggaggatttg gccgttdttt ctgtggtgta 720  
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<210> 10  
 <211> 258  
 <212> PRT  
 <213> *Chlamydia pneumoniae*

<400> 10

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Lys Phe Pro Ser Pro Gln Asn Pro Gln Val Val Thr Ile Ala Pro Ser  
 20 25 30

Ser Thr Thr Pro Gln Ala Val Ser Ser Ala Val Gln Gly Phe Leu Gln  
 35 40 45

Thr Gly Gly Ala Ala Ser Ser Thr Ala Thr Thr Thr Thr Ala Ser Gly  
 50 55 60

Ala Ser Ala Leu Gly Leu Ser Pro Asp Gln Val Gln Ala Leu Leu Thr  
 65 70 75 80

Asn Leu Leu Asn Val Gly Gln Pro Ser Val Gly Gln Pro Ser Thr Ser  
 85 90 95

Ala Gly Thr Ser Gly Ala Ser Ser Ser Ser Ala Ser Met Gln Gln Gln  
 100 105 110

Leu Leu Gln Leu Ile Leu Asp Lys Thr Thr Gly Ser Gly Gly Ser Ser  
 115 120 125

Val Ser Ser Glu Gln Leu Gln Gln Leu Leu Ser Leu Val Ser Gln Met  
 130 135 140

Thr Thr Ser Gln Gly Gly Ser Gly Gly Thr Gln Ala Gly Gln Ala Ala  
 145 150 155 160

Ser Val Leu Leu Asn Leu Leu Ser Ala Thr Gly Ser Ala Ala Ala Asn  
 165 170 175

Pro Leu Gly Thr Ala Ala Ser Leu Ala Gln Ile Ile Tyr Ala Ala Val  
 180 185 190

Thr Ser Pro Gly Ala Lys Lys Thr Ser Glu Phe Cys Tyr Asn Tyr Cys  
 195 200 205

Gly Glu Thr Cys Gln Gly Asn Cys Gly Cys Pro Thr Cys Gly Cys Pro  
 210 215 220

Asp Gly Gln Cys Gly Cys Gly Gly Phe Gly Arg Phe Phe Cys Gly Val  
 225 230 235 240

Trp Lys Asn Cys Cys Gly Ile Gly Glu Gly Ser Gln Glu Pro Ala Ile  
 245 250 255

Pro Leu

<210> 11  
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 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 11  
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60

|             |            |            |            |            |             |      |
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| tcagggcagc  | caagcgtggt | aaaacgttta | aaaacgtcat | ccacagggtt | attcaaaaga  | 120  |
| tttattacta  | ttcctgataa | atatcctaaa | atgcgctatg | tctatgacac | aggcattatt  | 180  |
| gcccttgcg   | caattgcat  | cctttcgatt | ctcctgactg | cttcaggaaa | cagccttatg  | 240  |
| ctttatgctc  | tcgctccggc | acttgccctg | ggagctttgg | gagttactct | acttatttct  | 300  |
| gatattcttg  | acagtccgaa | ggccaagaaa | atcggtgagg | caatcactgc | tatcgctcgt  | 360  |
| cctatcattg  | tattagcgat | tgctgcgggt | cttattgcag | gggctttcgt | tgccctctagt | 420  |
| gggacgatgt  | tagtctttgc | caaccctatg | tttgtcatgg | gattgattac | gggtggggcta | 480  |
| tacttcatgt  | ccttgaataa | gctcacctta | gattatttcc | gtagggaaca | cctcttgagg  | 540  |
| atggaaaaga  | aaaccaaga  | gaccgcggag | cctattctag | tgactccatc | cgccgacgat  | 600  |
| gcaaaaaaaaa | tcgcagtgga | aaagaaaaaa | gatctttctg | catctgcccg | catggaggaa  | 660  |
| cacgaagctt  | cacaacgcca | agatgcccg  | catcgtagga | tcggtcggga | ggctcaagga  | 720  |
| tctttcttct  | attcgtcacg | aaatcctgag | catagacgct | ccttcggcag | cctctcacgt  | 780  |
| tttaaaacaa  | aaccctcaga | tgcggttct  | acacgacccg | catctataag | tcctccattt  | 840  |
| aaggacgatt  | ttcagcctta | tcacttcaaa | gatttaagaa | gcagttcatt | cggtagtgga  | 900  |
| gcgagcagt   | cgtttacacc | cataatgcct | gcaagttccc | gctctcctaa | tttctccacg  | 960  |
| gggacggttc  | tacaccctga | gccggtctac | cctaagggag | gaaaagaacc | ctcaattcct  | 1020 |
| cgagtttctt  | catcttccc  | ccgttcccct | cgtgatcgcc | aagataaaca | gcagcaacag  | 1080 |
| caaatcaag   | atgaagaaca | gaaacagcaa | tctaagaaga | aaagcgggaa | atcgaatcaa  | 1140 |
| tctcttaaaa  | ctccgcctcc | agacggaaaa | agcacggcta | acctcagccc | ctccaatcca  | 1200 |
| ttctctgacg  | gttatgacga | aagagaaaaa | cggaaacaca | gaaagaacaa | ataa        | 1254 |

<210> 12

<211> 417

<212> PRT

<213> Chlamydia pneumoniae

<400> 12

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Gln | Pro | Pro | Ile | Asn | Pro | Leu | Gly | Gln | Pro | Gln | Val | Pro | Ala |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

Ala Ala Ser Pro Ser Gly Gln Pro Ser Val Val Lys Arg Leu Lys Thr  
20 25 30

Ser Ser Thr Gly Leu Phe Lys Arg Phe Ile Thr Ile Pro Asp Lys Tyr  
35 40 45

Pro Lys Met Arg Tyr Val Tyr Asp Thr Gly Ile Ile Ala Leu Ala Ala  
50 55 60

Ile Ala Ile Leu Ser Ile Leu Leu Thr Ala Ser Gly Asn Ser Leu Met  
65 70 75 80

Leu Tyr Ala Leu Ala Pro Ala Leu Ala Leu Gly Ala Leu Gly Val Thr  
85 90 95

Leu Leu Ile Ser Asp Ile Leu Asp Ser Pro Lys Ala Lys Lys Ile Gly  
100 105 110

Glu Ala Ile Thr Ala Ile Val Val Pro Ile Ile Val Leu Ala Ile Ala  
115 120 125

Ala Gly Leu Ile Ala Gly Ala Phe Val Ala Ser Ser Gly Thr Met Leu  
130 135 140

Val Phe Ala Asn Pro Met Phe Val Met Gly Leu Ile Thr Val Gly Leu  
145 150 155 160

Tyr Phe Met Ser Leu Asn Lys Leu Thr Leu Asp Tyr Phe Arg Arg Glu  
165 170 175

His Leu Leu Arg Met Glu Lys Lys Thr Gln Glu Thr Ala Glu Pro Ile  
180 185 190

Leu Val Thr Pro Ser Ala Asp Asp Ala Lys Lys Ile Ala Val Glu Lys  
195 200 205

Lys Lys Asp Leu Ser Ala Ser Ala Arg Met Glu Glu His Glu Ala Ser  
210 215 220

Gln Arg Gln Asp Ala Arg His Arg Arg Ile Gly Arg Glu Ala Gln Gly  
 225 230 235 240

Ser Phe Phe Tyr Ser Ser Arg Asn Pro Glu His Arg Arg Ser Phe Gly  
 245 250 255

Ser Leu Ser Arg Phe Lys Thr Lys Pro Ser Asp Ala Ala Ser Thr Arg  
 260 265 270

Pro Ala Ser Ile Ser Pro Pro Phe Lys Asp Asp Phe Gln Pro Tyr His  
 275 280 285

Phe Lys Asp Leu Arg Ser Ser Ser Phe Gly Ser Gly Ala Ser Ser Ala  
 290 295 300

Phe Thr Pro Ile Met Pro Ala Ser Ser Arg Ser Pro Asn Phe Ser Thr  
 305 310 315 320

Gly Thr Val Leu His Pro Glu Pro Val Tyr Pro Lys Gly Gly Lys Glu  
 325 330 335

Pro Ser Ile Pro Arg Val Ser Ser Ser Ser Arg Arg Ser Pro Arg Asp  
 340 345 350

Arg Gln Asp Lys Gln Gln Gln Gln Asn Gln Asp Glu Glu Gln Lys  
 355 360 365

Gln Gln Ser Lys Lys Lys Ser Gly Lys Ser Asn Gln Ser Leu Lys Thr  
 370 375 380

Pro Pro Pro Asp Gly Lys Ser Thr Ala Asn Leu Ser Pro Ser Asn Pro  
 385 390 395 400

Phe Ser Asp Gly Tyr Asp Glu Arg Glu Lys Arg Lys His Arg Lys Asn  
 405 410 415

Lys

<210> 13  
 <211> 657  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 13  
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 gttgatgtgc aaggggctcc tcctacaggt atcttgcagg tcttgcgttg taagcaacat 180  
 aaattttcaag gcctaccgtt acatggcccc attacttctt tatgggcttt ggagcccgtg 240  
 ggtaagggag ctccgcagct ggagtctgca atgtacgagc tctgttctca agtaaggaat 300  
 tttgacatct gctctattgt gagttgggtc tttggtgggt tgtgtatttt tgcagggtctg 360  
 attgtcgggg taatgggttg agcccctttg attgcgggat taagtgcttg ggtgattccc 420  
 tgtatcattg gagggggttg tgccatttta tgcttggttg cgatcttgat ggcgtacttg 480  
 ggaagaggga gagtccgtga gtggctcaat ctttcacacg aatatataac gcaatgtcat 540  
 tgtcgtcaga tacaggcaca ttctcaaaac tattctgtga tcacagagta tcctgcaacc 600  
 tgtgcattat ctcaaccgat tacaaagtta cctaattggat cacgcagaga taactaa 657

<210> 14  
 <211> 218  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 14  
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 Tyr Lys Asn Arg Tyr Phe Tyr Cys Gln Leu Cys Ala Glu Val Val Ser  
 20 25 30  
 Pro Tyr Val Val Pro Val Ile Val Val Asp Val Gln Gly Ala Pro Pro  
 35 40 45  
 Thr Gly Ile Leu Gln Val Leu Arg Cys Lys Gln His Lys Phe Gln Gly  
 50 55 60

Leu Pro Val His Gly Pro Ile Thr Ser Leu Trp Ala Leu Glu Pro Val  
65 70 75 80

Gly Lys Gly Ala Pro Gln Leu Glu Ser Ala Met Tyr Glu Leu Cys Ser  
85 90 95

Gln Val Arg Asn Phe Asp Ile Cys Ser Ile Val Ser Trp Val Phe Gly  
100 105 110

Gly Leu Cys Ile Phe Ala Gly Leu Ile Val Gly Val Met Val Glu Ala  
115 120 125

Pro Leu Ile Ala Gly Leu Ser Ala Trp Val Ile Pro Cys Ile Ile Gly  
130 135 140

Gly Val Gly Ala Ile Leu Cys Leu Phe Ala Ile Leu Met Ala Tyr Leu  
145 150 155 160

Gly Arg Gly Arg Val Arg Glu Trp Leu Asn Leu Ser His Glu Tyr Ile  
165 170 175

Thr Gln Cys His Cys Arg Gln Ile Gln Ala His Ser Gln Asn Tyr Ser  
180 185 190

Val Ile Thr Glu Tyr Pro Ala Thr Cys Ala Leu Ser Gln Pro Ile Thr  
195 200 205

Lys Leu Pro Asn Gly Ser Arg Arg Asp Asn  
210 215

<210> 15

<211> 873

<212> DNA

<213> Chlamydia pneumoniae

<400> 15

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gcgtgtgctc tccttattat tttcgatcctt gtggatgaaa ataaaattat acgctctcga 120

gatcctgtcg tattatcgaa atgtgaatat gtttgtgatg tcggtggtgt ttattctata 180

gaaaacaagc gttttgatca tcatcaagtc tcttatgatg gatcttggag tagtgcaggt 240  
 atgattctgc attatcttaa agagtttggt tatatggatt gtgaagaata tcatttcctt 300  
 aacaacactt tgggtacatgg tgtggatgaa caagataatg gcagattctt ctctaaggag 360  
 ggattttggt cgttttctga tattattaaa atttataatc ctgcgcgagga agaagaaact 420  
 aattcggatg cggatttttc ttgtgctttg cattttacca tcgacttttt gtgtcggcta 480  
 aggaagaagt ttcagtatga tcgagtttgt agggggattg tcagagaagc catggaaacc 540  
 gaggatatgt gtttatattt tgatcgtcct ttagcatggc aagaaaattt ctttttttta 600  
 gggggagaga agcaccctgc agcttttggt tgttttcctt cctgcgatca atggatttta 660  
 cgagggattc ctccgaattt agatcgccgt atggacgttc gtgttccttt ccctgagaat 720  
 tgggcagggt tgtaggtaa agagttgtcc aaagtatcag ggattcctgg ggctgtgttc 780  
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<210> 16  
 <211> 290  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 16

Met Gln Ile Pro Arg Ser Ile Gly Thr His Asp Gly Ser Phe His Ala  
 1 5 10 15

Asp Glu Val Thr Ala Cys Ala Leu Leu Ile Ile Phe Asp Leu Val Asp  
 20 25 30

Glu Asn Lys Ile Ile Arg Ser Arg Asp Pro Val Val Leu Ser Lys Cys  
 35 40 45

Glu Tyr Val Cys Asp Val Gly Gly Val Tyr Ser Ile Glu Asn Lys Arg  
 50 55 60

Phe Asp His His Gln Val Ser Tyr Asp Gly Ser Trp Ser Ser Ala Gly  
 65 70 75 80

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ile | Leu | His | Tyr | Leu | Lys | Glu | Phe | Gly | Tyr | Met | Asp | Cys | Glu | Glu | 85  | 90  | 95  |
| Tyr | His | Phe | Leu | Asn | Asn | Thr | Leu | Val | His | Gly | Val | Asp | Glu | Gln | Asp | 100 | 105 | 110 |
| Asn | Gly | Arg | Phe | Phe | Ser | Lys | Glu | Gly | Phe | Cys | Ser | Phe | Ser | Asp | Ile | 115 | 120 | 125 |
| Ile | Lys | Ile | Tyr | Asn | Pro | Arg | Glu | Glu | Glu | Glu | Thr | Asn | Ser | Asp | Ala | 130 | 135 | 140 |
| Asp | Phe | Ser | Cys | Ala | Leu | His | Phe | Thr | Ile | Asp | Phe | Leu | Cys | Arg | Leu | 145 | 150 | 155 |
| Arg | Lys | Lys | Phe | Gln | Tyr | Asp | Arg | Val | Cys | Arg | Gly | Ile | Val | Arg | Glu | 165 | 170 | 175 |
| Ala | Met | Glu | Thr | Glu | Asp | Met | Cys | Leu | Tyr | Phe | Asp | Arg | Pro | Leu | Ala | 180 | 185 | 190 |
| Trp | Gln | Glu | Asn | Phe | Phe | Phe | Leu | Gly | Gly | Glu | Lys | His | Pro | Ala | Ala | 195 | 200 | 205 |
| Phe | Val | Cys | Phe | Pro | Ser | Cys | Asp | Gln | Trp | Ile | Leu | Arg | Gly | Ile | Pro | 210 | 215 | 220 |
| Pro | Asn | Leu | Asp | Arg | Arg | Met | Asp | Val | Arg | Val | Pro | Phe | Pro | Glu | Asn | 225 | 230 | 235 |
| Trp | Ala | Gly | Leu | Leu | Gly | Lys | Glu | Leu | Ser | Lys | Val | Ser | Gly | Ile | Pro | 245 | 250 | 255 |
| Gly | Ala | Val | Phe | Cys | His | Lys | Gly | Leu | Phe | Leu | Ser | Val | Trp | Thr | Asn | 260 | 265 | 270 |
| Arg | Glu | Ser | Cys | Gln | Arg | Ala | Leu | Arg | Leu | Thr | Leu | Gln | Asp | Arg | Gly | 275 | 280 | 285 |

Ile Ile  
290

<210> 17  
<211> 2058  
<212> DNA  
<213> *Chlamydia pneumoniae*

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catttgaaaa aactctcgcc ccacatttac gaaggagagg tcctcattga gaatattcct 120  
gcgtaactttc ttggatttca tctgcctcaa cagtgtatac aagtaaattt aaaaagttcc 180  
ttagcccaac taggtgtcga agccgtttta aaccacttgg agctaaataa agcccgaaaa 240  
gaagctcgtc tacacgttct cttcatgagc caagatccta tagccactgc tatgttggag 300  
ctcctagagc ctggaagttt tgtctgcaag ctctttgctg ctgatgatcg ccgactcgta 360  
cgttcgcctt gttatctcaa caggatgttt acgcacacag accgtacagg atctccgctc 420  
ctacgctttg ggaaaaaact tgagcacttc atcactctag agatcattaa tgatcggctt 480  
gttgtcttcc ttccgatcct tccaggaaca atctgttacg aagagacaat ttatgggttc 540  
cttcccttaa tgagcaaata actcacgcgt ccccatTTaa aaatacgtaa gtttcttcct 600  
ttgtatcaaa tggtaacaga tcgtcctccc gttcccgaag atcataaaat tcttctcata 660  
aagacagagc ctctgcacat ccgaaccgta tttgcaagag tcgttcagga cttactcccc 720  
caagggcttc gtcacaccgc agcggatatt ctcgaaaccta ccacacaaga atctggagat 780  
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gctgcgatgt ttatctccaa aggtagttag ctgcttgagc tctcccaaga ctcttggatc 1020  
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gaagaccaac cttgtttccc ttttttaaaa gccatggaaa cagatcatat cacaagccaa 1140  
ggagttttat tttcccgtca cttcccttca gcatcgctga agggcatgtt cctctctaac 1200  
tactctcgct attacctgca acatatctat tttcagattc cctctcccac ttctggagag 1260

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tttttctcga atcgagatcg ctctttcctt ctcgatctat attttgcagg aatttctgta 1320
ttttgggcag acttagaatc gaaacgactc ttacaataca tcaaacgcag aaataaagat 1380
gtgggcatgt ttgtccctaa acatcaagct gaacagtttg ctcaatccta ctttatagga 1440
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agtctcaaaa cagggaaaaa agctcttggt cccgtcttcc taatcggacc tgtagactat 1860
tggaatcca agatcacagc tttgtataat tccaatcatg ctgtaggaac cattcgaggt 1920
tctgaatggg tacacaactg cctattctgc ctatcctcag caaaggcagg cattgcaatc 1980
ttccgcagat atctcaatca tacgctgcc ataggacctg aacaccctgt ccctgaagat 2040
ggttttgtta tcgttttag 2058

```

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<210> 18
<211> 685
<212> PRT
<213> Chlamydia pneumoniae

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```

<400> 18

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```

Met Tyr Asn Leu Leu His Ala His His Asp Ala Ala Ser Pro Asp Gly
1          5          10          15

```

```

Arg Leu Val Ser His Leu Lys Lys Leu Ser Pro His Ile Tyr Glu Gly
          20          25          30

```

```

Glu Val Leu Ile Glu Asn Ile Pro Ala Tyr Phe Leu Gly Phe His Leu
          35          40          45

```

```

Pro Gln Gln Cys Ile Gln Val Asn Leu Lys Ser Ser Leu Ala Gln Leu
          50          55          60

```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | Glu | Ala | Val | Leu | Asn | His | Leu | Glu | Leu | Asn | Lys | Ala | Arg | Lys | 65  | 70  | 75  | 80  |
| Glu | Ala | Arg | Leu | His | Val | Leu | Phe | Met | Ser | Gln | Asp | Pro | Ile | Ala | Thr | 85  | 90  | 95  |     |
| Ala | Met | Leu | Glu | Leu | Leu | Glu | Pro | Gly | Ser | Phe | Val | Cys | Lys | Leu | Phe | 100 | 105 | 110 |     |
| Ala | Ala | Asp | Asp | Arg | Arg | Leu | Val | Arg | Ser | Pro | Cys | Tyr | Leu | Asn | Arg | 115 | 120 | 125 |     |
| Met | Phe | Thr | His | Thr | Asp | Arg | Thr | Gly | Ser | Pro | Leu | Leu | Arg | Phe | Gly | 130 | 135 | 140 |     |
| Lys | Lys | Leu | Glu | His | Phe | Ile | Thr | Leu | Glu | Ile | Ile | Asn | Asp | Arg | Leu | 145 | 150 | 155 | 160 |
| Val | Val | Phe | Leu | Pro | Ile | Leu | Pro | Gly | Thr | Ile | Cys | Tyr | Glu | Glu | Thr | 165 | 170 | 175 |     |
| Ile | Tyr | Gly | Phe | Leu | Pro | Leu | Met | Ser | Lys | Ser | Leu | Thr | Arg | Pro | His | 180 | 185 | 190 |     |
| Leu | Lys | Ile | Arg | Lys | Phe | Leu | Pro | Leu | Tyr | Gln | Met | Val | Thr | Asp | Arg | 195 | 200 | 205 |     |
| Pro | Pro | Val | Pro | Glu | Asp | His | Lys | Ile | Leu | Leu | Ile | Lys | Thr | Glu | Pro | 210 | 215 | 220 |     |
| Leu | His | Ile | Arg | Thr | Val | Phe | Ala | Arg | Val | Val | Gln | Asp | Leu | Leu | Pro | 225 | 230 | 235 | 240 |
| Gln | Gly | Leu | Arg | His | Thr | Ala | Ala | Asp | Ile | Leu | Glu | Pro | Thr | Thr | Gln | 245 | 250 | 255 |     |
| Glu | Ser | Gly | Asp | Ile | Tyr | Glu | Phe | Tyr | Gly | Ser | Thr | Ser | Glu | Pro | Ile | 260 | 265 | 270 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Arg | Ile | Pro | Leu | Glu | Phe | Phe | Thr | Leu | Glu | Pro | Tyr | Lys | Glu | His |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Ser | Phe | Phe | Phe | Tyr | Arg | Asp | Met | Leu | Gln | Glu | Thr | Leu | Glu | Ser | Pro |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Gln | Glu | Val | Phe | Arg | Val | Phe | Glu | Ser | Ile | Pro | Glu | Gly | Glu | Asp | Gln |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Ala | Ala | Met | Phe | Ile | Ser | Lys | Gly | Ser | Glu | Leu | Leu | Glu | Leu | Ser | Gln |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Asp | Ser | Trp | Ile | Ile | Lys | Pro | Arg | Ile | Ser | Pro | Ser | Asp | Glu | Arg | His |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Ala | Arg | Glu | Ile | Gln | Lys | His | Ile | Glu | Asp | Gln | Pro | Cys | Phe | Pro | Phe |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Leu | Lys | Ala | Met | Glu | Thr | Asp | His | Ile | Thr | Ser | Gln | Gly | Val | Leu | Phe |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Ser | Arg | Tyr | Phe | Pro | Ser | Ala | Ser | Leu | Lys | Gly | Met | Phe | Leu | Ser | Asn |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Tyr | Ser | Arg | Tyr | Tyr | Leu | Gln | His | Ile | Tyr | Phe | Gln | Ile | Pro | Ser | Pro |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Thr | Ser | Gly | Glu | Phe | Phe | Ser | Asn | Arg | Asp | Arg | Ser | Phe | Leu | Leu | Asp |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Leu | Tyr | Phe | Ala | Gly | Ile | Ser | Val | Phe | Trp | Ala | Asp | Leu | Glu | Ser | Lys |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Arg | Leu | Leu | Gln | Tyr | Ile | Lys | Arg | Arg | Asn | Lys | Asp | Val | Gly | Met | Phe |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Val | Pro | Lys | His | Gln | Ala | Glu | Gln | Phe | Ala | Gln | Ser | Tyr | Phe | Ile | Gly |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | His | Gly | Ser | Cys | Leu | Ile | Ala | Gly | Asp | Tyr | Asp | Glu | Phe | Leu | Arg |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Leu | Leu | Thr | Gly | Met | His | Thr | Leu | Ser | Gln | Gln | Phe | Thr | Ile | Pro |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Phe | Pro | Pro | Gln | Thr | Pro | Leu | Ala | Ile | Leu | Thr | Gly | Gly | Gly | Ser |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Gly | Ala | Met | Glu | Leu | Ala | Asn | Arg | Val | Ala | Thr | Glu | Leu | Ser | Ile | Leu |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ser | Cys | Gly | Asn | Leu | Ile | Ser | Leu | Asp | Thr | Thr | Asn | Ala | Tyr | Val | Glu |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Lys | Met | Ser | Tyr | Ala | Ile | Pro | Asp | Leu | Leu | Glu | Arg | Gln | Ala | Asp |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Phe | His | Val | Asp | Leu | Ala | Val | Phe | Val | Ile | Gly | Gly | Met | Gly | Thr | Asp |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Phe | Glu | Leu | Leu | Leu | Glu | Leu | Ile | Ser | Leu | Lys | Thr | Gly | Lys | Lys | Ala |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Leu | Val | Pro | Val | Phe | Leu | Ile | Gly | Pro | Val | Asp | Tyr | Trp | Lys | Ser | Lys |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ile | Thr | Ala | Leu | Tyr | Asn | Ser | Asn | His | Ala | Val | Gly | Thr | Ile | Arg | Gly |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ser | Glu | Trp | Val | His | Asn | Cys | Leu | Phe | Cys | Leu | Ser | Ser | Ala | Lys | Ala |
|     |     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Gly | Ile | Ala | Ile | Phe | Arg | Arg | Tyr | Leu | Asn | His | Thr | Leu | Pro | Ile | Gly |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Pro | Glu | His | Pro | Val | Pro | Glu | Asp | Gly | Phe | Val | Ile | Val |     |     |     |
|     |     | 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |

<210> 19  
 <211> 273  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 19  
 ttggatgatt catggatcct agagggttaa gtcactccaa aagccaaaga gaacaaaatt 60  
 gtaggctttg atggacaagc tttgaaggct cgtgttaccg aacccccaga aaagggttaag 120  
 gccaatgatg ctgtaatttc tttattagca aaagctttat ccttaccgaa gcgtgatgctc 180  
 actttaattg caggagaaac ttctcgaaag aaaaagtttc ttcttcctaa cagagttcaa 240  
 gacattatct tttctttgca tatagacgta tag 273

<210> 20  
 <211> 90  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 20

Leu Asp Asp Ser Trp Ile Leu Glu Val Lys Val Thr Pro Lys Ala Lys  
 1 5 10 15

Glu Asn Lys Ile Val Gly Phe Asp Gly Gln Ala Leu Lys Val Arg Val  
 20 25 30

Thr Glu Pro Pro Glu Lys Gly Lys Ala Asn Asp Ala Val Ile Ser Leu  
 35 40 45

Leu Ala Lys Ala Leu Ser Leu Pro Lys Arg Asp Val Thr Leu Ile Ala  
 50 55 60

Gly Glu Thr Ser Arg Lys Lys Lys Phe Leu Leu Pro Asn Arg Val Gln  
 65 70 75 80

Asp Ile Ile Phe Ser Leu His Ile Asp Val  
 85 90

<210> 21  
 <211> 672  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 21  
atgaccctct acttaggatt gaatcaaaaa accgctcgta aataccaagc tcattatttg 60  
cctattctaa ctctcttccc ctatgcaaaa agcactccac aaaataagcg tgctcttcaa 120  
ttccttccac aagcaacca tgtgattctc acaagtcctt catccactca cctattcctt 180  
tccagaatga cttctcttct ttctaaggcc actctaaaaa caaagaccta cctctgtata 240  
ggagagtcca ccaaagaaag acttctctct ttccttggac aagtgaagta cgtagtagca 300  
actcaagaaa tcgctgaagg catcttccca ttgctacagg cactgccctc ttcagcccgc 360  
attctctacc cccactcctc cctcgcaaga cctgtgatca gagaatttct ttacaatcga 420  
tttacttttt tctcttacct tcactacaca gtgaagccgc gaaaacttaa aaaaaatatt 480  
ttatctaaat acaaaaaaat tatcttcaca agcccttcaa ctgtaagagc tttcgccaaa 540  
atctttccgc gatttctctga aaaaacctac tggtgccaag gaaggatgac cttgcaggag 600  
tttcaaaagt tctcctctca aaagcaggta tctttgttag aaacgcttgg gaagtccagg 660  
acatctccgt ga 672

<210> 22  
<211> 94  
<212> PRT  
<213> *Chlamydia pneumoniae*

<400> 22  
Met Thr Leu Tyr Leu Gly Leu Asn Gln Lys Thr Ala Arg Lys Tyr Gln  
1 5 10 15  
Ala His Tyr Leu Pro Ile Leu Thr Leu Phe Pro Tyr Ala Lys Ser Leu  
20 25 30  
Lys Val Arg Val Thr Glu Pro Pro Glu Lys Gly Lys Ala Asn Asp Ala  
35 40 45  
Val Ile Ser Leu Leu Ala Lys Ala Leu Ser Leu Pro Lys Arg Asp Val  
50 55 60  
Thr Leu Ile Ala Gly Glu Thr Ser Arg Lys Lys Lys Phe Leu Leu Pro  
65 70 75 80

Asn Arg Val Gln Asp Ile Ile Phe Ser Leu His Ile Asp Val  
85 90

<210> 23  
<211> 570  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 23  
atgtcatcaa atctacatcc cgtaggagga acaggaacag gagcagctgc tcttgagtct 60  
gtgctaaaca tagtagagga aatagcagca tcggggagtg tcaccgctgg tctacaagca 120  
attacgtcca gtccaggaat ggtgaatcta ctcataggat gggcaaagac aaaatttatt 180  
caacctatac gtgaatcaaa gctctttcaa tccagagctt gccaaattac cctgctcggt 240  
ttaggaattc ttttggttgt tgctggatta gcatgtatgt ttatcttcca tagccagtta 300  
ggggcaaagt cattttgggt gattattcct gctgccatag gattgattaa gttactagtt 360  
acatcattat gttttgatga agcttgtaca tctgaaaaac tcatgggttt ccaaaaatgg 420  
gcaggtgttt tagaagatca gctcgatgat gggatcctta ataactcaaa taagattttt 480  
ggccatgtga aaacagaagg aaatacctct agggctacta cccaggtact taatgatggc 540  
cgcggaactc ctgtactttc accttttagta 570

<210> 24  
<211> 190  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 24

Met Ser Ser Asn Leu His Pro Val Gly Gly Thr Gly Thr Gly Ala Ala  
1 5 10 15

Ala Pro Glu Ser Val Leu Asn Ile Val Glu Glu Ile Ala Ala Ser Gly  
20 25 30

Ser Val Thr Ala Gly Leu Gln Ala Ile Thr Ser Ser Pro Gly Met Val  
35 40 45

Asn Leu Leu Ile Gly Trp Ala Lys Thr Lys Phe Ile Gln Pro Ile Arg  
50 55 60

Glu Ser Lys Leu Phe Gln Ser Arg Ala Cys Gln Ile Thr Leu Leu Val  
65 70 75 80

Leu Gly Ile Leu Leu Val Val Ala Gly Leu Ala Cys Met Phe Ile Phe  
85 90 95

His Ser Gln Leu Gly Ala Asn Ala Phe Trp Leu Ile Ile Pro Ala Ala  
100 105 110

Ile Gly Leu Ile Lys Leu Leu Val Thr Ser Leu Cys Phe Asp Glu Ala  
115 120 125

Cys Thr Ser Glu Lys Leu Met Val Phe Gln Lys Trp Ala Gly Val Leu  
130 135 140

Glu Asp Gln Leu Asp Asp Gly Ile Leu Asn Asn Ser Asn Lys Ile Phe  
145 150 155 160

Gly His Val Lys Thr Glu Gly Asn Thr Ser Arg Ala Thr Thr Pro Val  
165 170 175

Leu Asn Asp Gly Arg Gly Thr Pro Val Leu Ser Pro Leu Val  
180 185 190

<210> 25  
<211> 828  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 25  
atgcacgata aaaacaaggt tctgtatcta caagcaaacc atctaaatca aaaaagaaaa 60  
cgtcataatc ctctaaatac ataccactcc tcaaacacaa ctgaaactcg tcgcttacca 120  
acatactata aatccaacat tgtcttaaaa atgattttac ggatctccac cgtaagcctt 180  
cttacaagtt gctccttctc gaaaaattct cgtacctgtt tcgtcactcc agaacgcatt 240  
acctcacaaa aagactgccc cgtccttctc catccaaaaa gcactacgat ttctccccct 300  
ctctatgact ggatctcccc aaatagagag gtaatcaccg cctattcttt ctactgccga 360  
ggatcaaggaa actctatcat aactcccgaa ggggttctct atgattgtga tggactccat 420

cacagcataa ctaaagaaga gttccggttat atccatccta gattgattga ggtagtacga 480  
ctcttgcaac aagatcaccc taaagtctct attattgaag ccttttggtg tcctaaacac 540  
tttcattttt tagaagcctc aggaatctca ctctctcaac tccatctcca aggtactgca 600  
gctaccttcg ctctagatcc tcccctcccc atggagaaac tcttggcaac tataaagaaa 660  
ctgtataaaa aaaactccga tccttctctc tctaatttta tcgttacaga agctacactg 720  
accaatccag aactgcgact cacgcaacaa gatctcggct cgcatacaga aattactgta 780  
gaaattctcg ataatctaca aaacaaagag gctctttcct ccgcataa 828

<210> 26  
<211> 142  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 26

Met His Asp Lys Asn Lys Val Leu Tyr Leu Gln Ala Asn His Leu Asn  
1 5 10 15

Gln Lys Arg Lys Arg His Asn Pro Leu Asn Thr Tyr His Ser Ser Asn  
20 25 30

Thr Thr Glu Thr Arg Arg Leu Pro Thr Tyr Tyr Lys Ser Asn Ile Val  
35 40 45

Leu Lys Met Ile Leu Arg Ile Ser Thr Val Ser Leu Leu Thr Ser Cys  
50 55 60

Ser Phe Ser Lys Asn Ser Arg Thr Cys Phe Val Thr Pro Glu Arg Leu  
65 70 75 80

Lys Val Arg Val Thr Glu Pro Pro Glu Lys Gly Lys Ala Asn Asp Ala  
85 90 95

Val Ile Ser Leu Leu Ala Lys Ala Leu Ser Leu Pro Lys Arg Asp Val  
100 105 110

Thr Leu Ile Ala Gly Glu Thr Ser Arg Lys Lys Lys Phe Leu Leu Pro  
115 120 125

Asn Arg Val Gln Asp Ile Ile Phe Ser Leu His Ile Asp Val  
 130 135 140

<210> 27  
 <211> 546  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 27  
 atgtccttat tgaaccttcc ctcaagccag gattctgcat ctgaggactc cacatcgcaa 60  
 tctcaaattct tcgatcccat tagaaatcgg gagttagttt ctactcccga agaaaaagtc 120  
 cgccaaaggt tgctctcctt cctaattgcat aagctgaact accctaagaa actcatcatc 180  
 atagaaaaag aactcaaaac tctttttcct ctgcttatgc gtaaaggaac cctaattcca 240  
 aaacgccgcc cagatattct catcatcact cccccacat acacagacgc acagggaaac 300  
 actcacaacc taggcgaccc aaaaccctg ctacttatcg aatgtaaggc cttagccgta 360  
 aaccaaaatg cactcaaaca actccttagc tataactact ctatcggagc cacctgcatt 420  
 gctatggcag ggaaacactc tcaagtgtca gctctcttca atccaaaaac acaaactctt 480  
 gattttttatc ctggcctccc agagtattcc caactcctaa actactttat ttctttaaac 540  
 ttatag 546

<210> 28  
 <211> 106  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 28

Met Ser Leu Leu Asn Leu Pro Ser Ser Gln Asp Ser Ala Ser Glu Asp  
 1 5 10 15

Ser Thr Ser Gln Ser Gln Ile Phe Asp Pro Ile Arg Asn Arg Glu Leu  
 20 25 30

Val Ser Thr Pro Glu Glu Lys Val Arg Gln Arg Leu Lys Val Arg Val  
 35 40 45

Thr Glu Pro Pro Glu Lys Gly Lys Ala Asn Asp Ala Val Ile Ser Leu

50

55

60

Leu Ala Lys Ala Leu Ser Leu Pro Lys Arg Asp Val Thr Leu Ile Ala  
 65 70 75 80

Gly Glu Thr Ser Arg Lys Lys Lys Phe Leu Leu Pro Asn Arg Val Gln  
 85 90 95

Asp Ile Ile Phe Ser Leu His Ile Asp Val  
 100 105

<210> 29

<211> 972

<212> DNA

<213> Chlamydia pneumoniae

<400> 29

|             |            |             |             |            |            |     |
|-------------|------------|-------------|-------------|------------|------------|-----|
| atgaaacaat  | tacttttctg | tgtttgcgta  | tttgctatgt  | catgttctgc | ttacgcatcc | 60  |
| ccacgacgac  | aagatccttc | tgttatgaag  | gaaacattcc  | gaaataatta | tggcattatt | 120 |
| gtttccggtc  | aagaatgggt | aaagcgtggt  | tctgacggca  | ccatcaccaa | agtactcaaa | 180 |
| aatggagcta  | ccctgcatga | agtttattct  | ggaggcctcc  | ttcatgggga | aattacctta | 240 |
| acgtttcccc  | ataccacagc | attggacggt  | gttcaaattct | atgatcaagg | tagactcggt | 300 |
| tctcgcaaaa  | ccttttttgt | gaacggtctt  | ccatctcaag  | aagagctggt | caatgaagat | 360 |
| ggcacgtttg  | tcctcacacg | atggccggac  | aacaacgaca  | gtgataccat | cacaaagcct | 420 |
| tacttcatag  | aaacgacata | tcaagggcat  | gtcatagaag  | gaagttatac | ttcctttaat | 480 |
| gggaaataact | cctcatccat | ccacaatgga  | gagggagttc  | gttctgtggt | ctcctccaat | 540 |
| aacatccttc  | tttctgaaga | gaccttcaat  | gaaggtgtca  | tggtgaaata | taccacattc | 600 |
| tatccgaatc  | gcgatcccga | atcgattact  | cattatcaaa  | atggacagcc | tcacggctta | 660 |
| cggctaacat  | atctacaagg | tggtcatcccc | aatacgatag  | aggagtggcg | ttatggcttt | 720 |
| caagacggaa  | cgaccatcgt | atttaaaaat  | ggttgtaaga  | catctgagat | cgcttatggt | 780 |
| aagggagtga  | aagaagggtt | agaactgctc  | tacaatgaac  | aggaaattgt | agctgaagaa | 840 |
| gtttcttggc  | gtaatgattt | tctgcatgga  | gaacgtaaga  | tctatgctgg | aggaatccaa | 900 |
| aagcatgaat  | ggtattaccg | cgggagatct  | gtatctaaag  | ccaaattcga | gcggctaaat | 960 |

gctgcaggat ag

972

<210> 30

<211> 323

<212> PRT

<213> Chlamydia pneumoniae

<400> 30

Met Lys Gln Leu Leu Phe Cys Val Cys Val Phe Ala Met Ser Cys Ser  
1 5 10 15

Ala Tyr Ala Ser Pro Arg Arg Gln Asp Pro Ser Val Met Lys Glu Thr  
20 25 30

Phe Arg Asn Asn Tyr Gly Ile Ile Val Ser Gly Gln Glu Trp Val Lys  
35 40 45

Arg Gly Ser Asp Gly Thr Ile Thr Lys Val Leu Lys Asn Gly Ala Thr  
50 55 60

Leu His Glu Val Tyr Ser Gly Gly Leu Leu His Gly Glu Ile Thr Leu  
65 70 75 80

Thr Phe Pro His Thr Thr Ala Leu Asp Val Val Gln Ile Tyr Asp Gln  
85 90 95

Gly Arg Leu Val Ser Arg Lys Thr Phe Phe Val Asn Gly Leu Pro Ser  
100 105 110

Gln Glu Glu Leu Phe Asn Glu Asp Gly Thr Phe Val Leu Thr Arg Trp  
115 120 125

Pro Asp Asn Asn Asp Ser Asp Thr Ile Thr Lys Pro Tyr Phe Ile Glu  
130 135 140

Thr Thr Tyr Gln Gly His Val Ile Glu Gly Ser Tyr Thr Ser Phe Asn  
145 150 155 160

Gly Lys Tyr Ser Ser Ser Ile His Asn Gly Glu Gly Val Arg Ser Val  
165 170 175

Phe Ser Ser Asn Asn Ile Leu Leu Ser Glu Glu Thr Phe Asn Glu Gly  
 180 185 190

Val Met Val Lys Tyr Thr Thr Phe Tyr Pro Asn Arg Asp Pro Glu Ser  
 195 200 205

Ile Thr His Tyr Gln Asn Gly Gln Pro His Gly Leu Arg Leu Thr Tyr  
 210 215 220

Leu Gln Gly Gly Ile Pro Asn Thr Ile Glu Glu Trp Arg Tyr Gly Phe  
 225 230 235 240

Gln Asp Gly Thr Thr Ile Val Phe Lys Asn Gly Cys Lys Thr Ser Glu  
 245 250 255

Ile Ala Tyr Val Lys Gly Val Lys Glu Gly Leu Glu Leu Arg Tyr Asn  
 260 265 270

Glu Gln Glu Ile Val Ala Glu Glu Val Ser Trp Arg Asn Asp Phe Leu  
 275 280 285

His Gly Glu Arg Lys Ile Tyr Ala Gly Gly Ile Gln Lys His Glu Trp  
 290 295 300

Tyr Tyr Arg Gly Arg Ser Val Ser Lys Ala Lys Phe Glu Arg Leu Asn  
 305 310 315 320

Ala Ala Gly

<210> 31

<211> 429

<212> DNA

<213> Chlamydia pneumoniae

<400> 31

atgagtttag attttttcga ggagttctat catcagtcaa tactcaatac agggacgtcc 60

ttccccgaag gataacttaaa tattgcagaa atactctctt atcctcattg cactgatgct 120

aacactgact ttctctgtag ccagtctgac aacgatttta ttattgcaga atctaaagat 180

aaactcacat tatttaacgc tgattttgct atttggtctg ttcctgagct tgttcaagga 240  
caggcagtca ctcggggata tattgcggtt tcccaaggag aaggaaacta tgaaccagaa 300  
atggctttcg aagcctctgg acaatacaat cagtcgtcgc tgattctcga agccctgcag 360  
ttatatctta aggatattaa agatactgaa aatgctctgc gttctttccg ctttaataac 420  
gatcactag 429

<210> 32  
<211> 142  
<212> PRT  
<213> Chlamydia pneumoniae  
<400> 32

Met Ser Leu Asp Phe Phe Glu Glu Phe Tyr His Gln Ser Ile Leu Asn  
1 5 10 15

Thr Gly Thr Ser Phe Pro Glu Gly Tyr Leu Asn Ile Ala Glu Ile Leu  
20 25 30

Ser Tyr Pro His Cys Thr Asp Ala Asn Thr Asp Phe Leu Cys Ser Gln  
35 40 45

Ser Asp Asn Asp Phe Ile Ile Ala Glu Ser Lys Asp Lys Leu Thr Leu  
50 55 60

Phe Asn Ala Asp Phe Ala Ile Trp Leu Val Pro Glu Leu Val Gln Gly  
65 70 75 80

Gln Ala Val Thr Arg Gly Tyr Ile Ala Val Ser Gln Gly Glu Gly Asn  
85 90 95

Tyr Glu Pro Glu Met Ala Phe Glu Ala Ser Gly Gln Tyr Asn Gln Ser  
100 105 110

Ser Leu Ile Leu Glu Ala Leu Gln Leu Tyr Leu Lys Asp Ile Lys Asp  
115 120 125

Thr Glu Asn Ala Leu Arg Ser Phe Arg Phe Asn Asn Asp His  
130 135 140

<210> 33  
 <211> 180  
 <212> DNA  
 <213> *Chlamydia pneumoniae*  
  
 <400> 33  
 gtgtctattg ccttaaaccg agaagaagtt tgggataatc cccatcactt aatgtttatc 60  
 ttaatgcaat tccaacaatt ttcaggggaa caggatcggt ttggaagttt cttagaagca 120  
 accatccgtg atcgggtctc ttttttagtc ttacaagaaa agattgccac tttaaagtag 180

<210> 34  
 <211> 59  
 <212> PRT  
 <213> *Chlamydia pneumoniae*  
  
 <400> 34  
 Val Ser Ile Ala Leu Asn Arg Glu Glu Val Trp Asp Asn Pro His His  
 1 5 10 15  
 Leu Met Phe Ile Leu Met Gln Phe Gln Gln Phe Ser Gly Glu Gln Asp  
 20 25 30  
 Arg Phe Gly Ser Phe Leu Glu Ala Thr Ile Arg Asp Arg Val Ser Phe  
 35 40 45  
 Leu Val Leu Gln Glu Lys Ile Ala Thr Leu Lys  
 50 55

<210> 35  
 <211> 675  
 <212> DNA  
 <213> *Chlamydia pneumoniae*  
  
 <400> 35  
 atgcaaacc ttgctcgtct atttggccaa tctccatttg ctcttttaca agctcatctg 60  
 gaaatggtgg tctcttgtgt ggaatacatg cttcctatat tcaactgctct ccgagatgga 120  
 agatatgaag aattattaga aatggcaaaa cttgttttctg ataaagagta tcaagcagat 180  
 tgtataaaaa atgatatgag gaatcatctt cctgcaggat tattcatgcc gatattctga 240  
 gcggggattc tagaaattat ttctatacaa gatagcatcg cggatactgc tgaagatggt 300

gctatcttat taaccatcag acgattaaac ttttatccat ctatggaaac gctttttttc 360  
cgatttttgg aaaaaaatct agaagctttt gagttaacta tgacattgct acatgaattc 420  
aaccaattgc ttgaaagttc atttgggggg aggaaggcag ataaagcacg cttgcttgta 480  
gggcgtgtgg ctaaactctga acatgaatcg gatgttttgc aacgagaact tatgcaaata 540  
tttttttctg atgattttat aattcctgaa aaagagtttt atctttgggtt acaagtaatt 600  
cgacgcactg cggggatttc agatagttct gaaaagctcg cacatagaat taatatgacc 660  
ctagaagaaa agtaa 675

<210> 36  
<211> 224  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 36

Met Gln Thr Leu Ala Arg Leu Phe Gly Gln Ser Pro Phe Ala Pro Leu  
1 5 10 15

Gln Ala His Leu Glu Met Val Val Ser Cys Val Glu Tyr Met Leu Pro  
20 25 30

Ile Phe Thr Ala Leu Arg Asp Gly Arg Tyr Glu Glu Leu Leu Glu Met  
35 40 45

Ala Lys Leu Val Ser Asp Lys Glu Tyr Gln Ala Asp Cys Ile Lys Asn  
50 55 60

Asp Met Arg Asn His Leu Pro Ala Gly Leu Phe Met Pro Ile Ser Arg  
65 70 75 80

Ala Gly Ile Leu Glu Ile Ile Ser Ile Gln Asp Ser Ile Ala Asp Thr  
85 90 95

Ala Glu Asp Val Ala Ile Leu Leu Thr Ile Arg Arg Leu Asn Phe Tyr  
100 105 110

Pro Ser Met Glu Thr Leu Phe Phe Arg Phe Leu Glu Lys Asn Leu Glu  
115 120 125

Ala Phe Glu Leu Thr Met Thr Leu Leu His Glu Phe Asn Gln Leu Leu  
 130 135 140

Glu Ser Ser Phe Gly Gly Arg Lys Ala Asp Lys Ala Arg Leu Leu Val  
 145 150 155 160

Gly Arg Val Ala Lys Ser Glu His Glu Ser Asp Val Leu Gln Arg Glu  
 165 170 175

Leu Met Gln Ile Phe Phe Ser Asp Asp Phe Ile Ile Pro Glu Lys Glu  
 180 185 190

Phe Tyr Leu Trp Leu Gln Val Ile Arg Arg Thr Ala Gly Ile Ser Asp  
 195 200 205

Ser Ser Glu Lys Leu Ala His Arg Ile Asn Met Thr Leu Glu Glu Lys  
 210 215 220

<210> 37  
 <211> 2538  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 37  
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 gatgggataa gctggtctat aggacgcgac tctagtgcta atgacattcc tattgaagat 120  
 cctaaactcg gtgcatcgca agccattatc aataagactg acggaagcta ctacatcaca 180  
 aatttagatg atacaattcc tattgttgta aatggcgtag cgatccaaga aactacacag 240  
 ttaaaaaatg aagatactat cttattagga agcaatcagt attctttctt atcagatgaa 300  
 tttgatcctc aagatcttgt ttatgatttt gatattcccg aagaaaattt ttctaattgat 360  
 tcaggggatt tgtccgatag taatgaacag ggaaaagatc ttgagcctcg gcaaacttcg 420  
 gaaacaaatc attcaccgaa gcctaaggaa aagctgacca aagatcaggg aagtagcgat 480  
 ccaattacaa gtgggggatca ggagcttgct gatgcttttt tagcatcagc aaaagcggaa 540  
 aaaaatcaac caagagccaa agttgctaag aagggttttaa aagaatcttc aaacgagtct 600  
 ttgaatccaa aggaacaaaa tgcaaaggat tctccgaaag gagaggaaag aaccaacaaa 660

|             |             |             |             |              |            |      |
|-------------|-------------|-------------|-------------|--------------|------------|------|
| ccccagaacg  | ccattatgga  | agataacgga  | gcttcgccta  | ggcaagatcc   | gcaaccaaag | 720  |
| tcagcagaac  | cctctcttaa  | aaacacagcc  | agggatgaga  | ctcccttgaa   | agaaaataaa | 780  |
| cctgtagaag  | agaaggctaa  | taagaaagca  | acaccggatt  | ctccagaaaa   | aaaagatcaa | 840  |
| cctgaggaag  | gttctaaaaa  | ggaaggctct  | aaaatagaag  | caacaccttt   | ggattcacaa | 900  |
| aaagaatccg  | aggataagga  | agcagaagaa  | gcctttgtac  | aagaagaaga   | agagaacctt | 960  |
| acggaagata  | ataaagaaga  | ttctgacagt  | gccgctgatg  | caaatagacga  | cacggcaagt | 1020 |
| gaccatactg  | cagaggataa  | caaagaaact  | cctaaaaaag  | tcgagaacga   | aaagagcgca | 1080 |
| gttctatccc  | catttcatgt  | tcaagactta  | tttcgattcg  | atcaaacaat   | ttttccagca | 1140 |
| gagattgatg  | atattgcgaa  | aaaaaatatc  | tctgtagact  | tgacgcagcc   | ttctcgtttt | 1200 |
| ttactcaaag  | ttttagccgg  | agctaataatt | ggagcagagt  | tccattttaga  | ctcaggaaaa | 1260 |
| acctatattt  | taggtacgga  | tcctacaact  | tgtgacatag  | tatttaatatga | cttaagtgtt | 1320 |
| tctcatcaac  | atgctaaaat  | tactgtcggg  | aatgacgggg  | gcattcttat   | cgaggatctc | 1380 |
| gatagtaaaa  | acggtgtcat  | tggtgaagga  | cgaaaaattg  | ataagacctc   | tacattgagc | 1440 |
| tcgaatcaag  | ttgtggcttt  | aggaacgaca  | ttattttttac | ttatagatca   | tcatgcccc  | 1500 |
| gctgatacta  | tagttgcttc  | tctatcccca  | gacgattaca  | gtttgtttgg   | gagacagcaa | 1560 |
| gacgccgaag  | ccttagaaaag | acaagaggcc  | caagaagaag  | aagaaaaaca   | aaaacgcgct | 1620 |
| acactacccg  | caggatcttt  | cattottacc  | ctgtttgttg  | gaggattggc   | tattctcttt | 1680 |
| ggatataggaa | cagcttctct  | tttccatacc  | aaagaagtgg  | ttccttttaga  | aaatattgat | 1740 |
| tatcaagaag  | atcttgccca  | ggttatcaat  | cagttcccta  | cggtgcgtta   | tacgtttaat | 1800 |
| aaaacgaaca  | gccaactttt  | cttaatcgga  | catgtcaaaa  | atagtacgga   | caaaagcgag | 1860 |
| ctgctgtata  | aagtagacgc  | cctttccttt  | gtgaaatccg  | tagatgataa   | tgttattgat | 1920 |
| gatgaagctg  | tttggcagga  | gatgaacatc  | ctgttatcaa  | agcgacccga   | gtttaaaggc | 1980 |
| atcagcatgc  | attccccaga  | acctgggaaa  | ttcatcatca  | caggctatgt   | caagactgag | 2040 |
| gagcaagcag  | cttgccctcgt | tgattattta  | aatatacatt  | ttaattacct   | ctcgttacta | 2100 |
| gagaataaag  | ttgttggtga  | aaccagatg   | ttaaaagcaa  | ttgcaggcca   | tcttcttcaa | 2160 |
| ggagggtttg  | caaacatcca  | tgtggccttt  | gtgaacggtg  | aagttatcct   | tactggttac | 2220 |

gtcaataacg atgatgcaga gaagttccgt gctgtagtgc aagagctgtc ggggattcct 2280  
 ggtgtgaggt tgggtcaagaa ttttgctgtc ttactcccag ctgaagaggg aatcatagat 2340  
 ttaaacctac gttaccccaa tcgctatcgt gttacaggct attctagata cggagaaata 2400  
 agtatcaatg tagttgtcaa tggcagaatc ctcacaagag gggacgtgat tgatgggatg 2460  
 acagtaacaa gtatacaacc taacgcgatc tttttagaga aggaagggtt gaaatataaa 2520  
 atagactaca ataaataa 2538

<210> 38  
 <211> 845  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 38

Met Ala Val Arg Leu Ile Val Asp Glu Gly Pro Leu Ser Gly Val Ile  
 1 5 10 15

Phe Val Leu Glu Asp Gly Ile Ser Trp Ser Ile Gly Arg Asp Ser Ser  
 20 25 30

Ala Asn Asp Ile Pro Ile Glu Asp Pro Lys Leu Gly Ala Ser Gln Ala  
 35 40 45

Ile Ile Asn Lys Thr Asp Gly Ser Tyr Tyr Ile Thr Asn Leu Asp Asp  
 50 55 60

Thr Ile Pro Ile Val Val Asn Gly Val Ala Ile Gln Glu Thr Thr Gln  
 65 70 75 80

Leu Lys Asn Glu Asp Thr Ile Leu Leu Gly Ser Asn Gln Tyr Ser Phe  
 85 90 95

Leu Ser Asp Glu Phe Asp Pro Gln Asp Leu Val Tyr Asp Phe Asp Ile  
 100 105 110

Pro Glu Glu Asn Phe Ser Asn Asp Ser Gly Asp Leu Ser Asp Ser Asn  
 115 120 125

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Gln | Gly | Lys | Asp | Leu | Glu | Pro | Arg | Gln | Thr | Ser | Glu | Thr | Asn | His |
| 130 |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Ser | Pro | Lys | Pro | Lys | Glu | Lys | Leu | Thr | Lys | Asp | Gln | Gly | Ser | Ser | Asp |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Pro | Ile | Thr | Ser | Gly | Asp | Gln | Glu | Leu | Ala | Asp | Ala | Phe | Leu | Ala | Ser |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ala | Lys | Ala | Glu | Lys | Asn | Gln | Pro | Arg | Ala | Lys | Val | Ala | Lys | Lys | Gly |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Leu | Lys | Glu | Ser | Ser | Asn | Glu | Ser | Leu | Asn | Pro | Lys | Glu | Gln | Asn | Ala |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Lys | Asp | Ser | Pro | Lys | Gly | Glu | Glu | Arg | Thr | Asn | Lys | Pro | Gln | Asn | Ala |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ile | Met | Glu | Asp | Asn | Gly | Ala | Ser | Pro | Arg | Gln | Asp | Pro | Gln | Pro | Lys |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Ser | Ala | Glu | Pro | Ser | Leu | Lys | Asn | Thr | Ala | Arg | Asp | Glu | Thr | Pro | Leu |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Lys | Glu | Asn | Lys | Pro | Val | Glu | Glu | Lys | Ala | Asn | Lys | Lys | Ala | Thr | Pro |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Asp | Ser | Pro | Glu | Lys | Lys | Asp | Gln | Pro | Glu | Glu | Gly | Ser | Lys | Lys | Glu |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Gly | Ser | Lys | Ile | Glu | Ala | Thr | Pro | Leu | Asp | Ser | Gln | Lys | Glu | Ser | Glu |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Asp | Lys | Glu | Ala | Glu | Glu | Ala | Phe | Val | Gln | Glu | Glu | Glu | Glu | Asn | Leu |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Thr | Glu | Asp | Asn | Lys | Glu | Asp | Ser | Asp | Ser | Ala | Ala | Asp | Ala | Asn | Asp |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Asp | Thr | Ala | Ser | Asp | His | Thr | Ala | Glu | Asp | Asn | Lys | Glu | Thr | Pro | Lys |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Lys | Val | Glu | Asn | Glu | Lys | Ser | Ala | Val | Leu | Ser | Pro | Phe | His | Val | Gln |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asp | Leu | Phe | Arg | Phe | Asp | Gln | Thr | Ile | Phe | Pro | Ala | Glu | Ile | Asp | Asp |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Ile | Ala | Lys | Lys | Asn | Ile | Ser | Val | Asp | Leu | Thr | Gln | Pro | Ser | Arg | Phe |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Leu | Leu | Lys | Val | Leu | Ala | Gly | Ala | Asn | Ile | Gly | Ala | Glu | Phe | His | Leu |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asp | Ser | Gly | Lys | Thr | Tyr | Ile | Leu | Gly | Thr | Asp | Pro | Thr | Thr | Cys | Asp |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Ile | Val | Phe | Asn | Asp | Leu | Ser | Val | Ser | His | Gln | His | Ala | Lys | Ile | Thr |  |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Val | Gly | Asn | Asp | Gly | Gly | Ile | Leu | Ile | Glu | Asp | Leu | Asp | Ser | Lys | Asn |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Gly | Val | Ile | Val | Glu | Gly | Arg | Lys | Ile | Asp | Lys | Thr | Ser | Thr | Leu | Ser |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Ser | Asn | Gln | Val | Val | Ala | Leu | Gly | Thr | Thr | Leu | Phe | Leu | Leu | Ile | Asp |  |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| His | His | Ala | Pro | Ala | Asp | Thr | Ile | Val | Ala | Ser | Leu | Ser | Pro | Asp | Asp |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Tyr | Ser | Leu | Phe | Gly | Arg | Gln | Gln | Asp | Ala | Glu | Ala | Leu | Glu | Arg | Gln |  |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Glu | Ala | Gln | Glu | Glu | Glu | Glu | Lys | Gln | Lys | Arg | Ala | Thr | Leu | Pro | Ala |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gly<br>545 | Ser        | Phe        | Ile        | Leu        | Thr<br>550 | Leu        | Phe        | Val        | Gly        | Gly<br>555 | Leu        | Ala        | Ile        | Leu        | Phe<br>560 |
| Gly        | Ile        | Gly        | Thr        | Ala<br>565 | Ser        | Leu        | Phe        | His        | Thr<br>570 | Lys        | Glu        | Val        | Val        | Pro<br>575 | Leu        |
| Glu        | Asn        | Ile        | Asp<br>580 | Tyr        | Gln        | Glu        | Asp        | Leu<br>585 | Ala        | Gln        | Val        | Ile        | Asn<br>590 | Gln        | Phe        |
| Pro        | Thr        | Val<br>595 | Arg        | Tyr        | Thr        | Phe        | Asn<br>600 | Lys        | Thr        | Asn        | Ser        | Gln<br>605 | Leu        | Phe        | Leu        |
| Ile        | Gly<br>610 | His        | Val        | Lys        | Asn        | Ser<br>615 | Thr        | Asp        | Lys        | Ser        | Glu<br>620 | Leu        | Leu        | Tyr        | Lys        |
| Val<br>625 | Asp        | Ala        | Leu        | Ser        | Phe<br>630 | Val        | Lys        | Ser        | Val        | Asp<br>635 | Asp        | Asn        | Val        | Ile        | Asp<br>640 |
| Asp        | Glu        | Ala        | Val        | Trp<br>645 | Gln        | Glu        | Met        | Asn        | Ile<br>650 | Leu        | Leu        | Ser        | Lys        | Arg<br>655 | Pro        |
| Glu        | Phe        | Lys        | Gly<br>660 | Ile        | Ser        | Met        | His        | Ser<br>665 | Pro        | Glu        | Pro        | Gly        | Lys<br>670 | Phe        | Ile        |
| Ile        | Thr        | Gly<br>675 | Tyr        | Val        | Lys        | Thr        | Glu<br>680 | Glu        | Gln        | Ala        | Ala        | Cys<br>685 | Leu        | Val        | Asp        |
| Tyr        | Leu<br>690 | Asn        | Ile        | His        | Phe        | Asn<br>695 | Tyr        | Leu        | Ser        | Leu        | Leu<br>700 | Glu        | Asn        | Lys        | Val        |
| Val<br>705 | Val        | Glu        | Thr        | Gln        | Met<br>710 | Leu        | Lys        | Ala        | Ile        | Ala<br>715 | Gly        | His        | Leu        | Leu        | Gln<br>720 |
| Gly        | Gly        | Phe        | Ala        | Asn<br>725 | Ile        | His        | Val        | Ala        | Phe<br>730 | Val        | Asn        | Gly        | Glu        | Val<br>735 | Ile        |
| Leu        | Thr        | Gly        | Tyr<br>740 | Val        | Asn        | Asn        | Asp        | Asp<br>745 | Ala        | Glu        | Lys        | Phe        | Arg<br>750 | Ala        | Val        |

Val Gln Glu Leu Ser Gly Ile Pro Gly Val Arg Leu Val Lys Asn Phe  
 755 760 765

Ala Val Leu Leu Pro Ala Glu Glu Gly Ile Ile Asp Leu Asn Leu Arg  
 770 775 780

Tyr Pro Asn Arg Tyr Arg Val Thr Gly Tyr Ser Arg Tyr Gly Glu Ile  
 785 790 795 800

Ser Ile Asn Val Val Val Asn Gly Arg Ile Leu Thr Arg Gly Asp Val  
 805 810 815

Ile Asp Gly Met Thr Val Thr Ser Ile Gln Pro Asn Ala Ile Phe Leu  
 820 825 830

Glu Lys Glu Gly Leu Lys Tyr Lys Ile Asp Tyr Asn Lys  
 835 840 845

<210> 39  
 <211> 237  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 39  
 atgaaagaat ttttagccta tatcattaag aatctagtgg accgccctga agaagtccgt 60  
 attaaagaag ttcaggggac tcacacgatt atttatgaac taagtgtagc taaacctgat 120  
 atcgggaaga tcattggcaa agaaggccgt acgatcaaag cgattcgtac tcttctggtt 180  
 tctgtagcaa gcaggaacaa tgtaagggtc agtttagaaa ttatggaaga aaagtag 237

<210> 40  
 <211> 78  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 40

Met Lys Glu Phe Leu Ala Tyr Ile Ile Lys Asn Leu Val Asp Arg Pro  
 1 5 10 15

Glu Glu Val Arg Ile Lys Glu Val Gln Gly Thr His Thr Ile Ile Tyr  
 20 25 30

Glu Leu Ser Val Ala Lys Pro Asp Ile Gly Lys Ile Ile Gly Lys Glu  
 35 40 45

Gly Arg Thr Ile Lys Ala Ile Arg Thr Leu Leu Val Ser Val Ala Ser  
 50 55 60

Arg Asn Asn Val Arg Val Ser Leu Glu Ile Met Glu Glu Lys  
 65 70 75

<210> 41  
 <211> 228  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 41  
 atgtttttcgc ctcctcttct ttatgaatcg ttacggaggg gtcttatgca tccaacatct 60  
 catatgcaac agcaactcgc tcgcttggag tttatcaacg accagctgac tacagagtta 120  
 gaacatgtaa atgaattatt atgtagttta ggtttccctg aaggtctcac tacaatcaag 180  
 gcaatcgcag aggaagtcct ctctgatgac gaacctctac tagattag 228

<210> 42  
 <211> 75  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 42

Met Phe Phe Ala Pro Leu Leu Tyr Glu Ser Leu Arg Arg Gly Leu Met  
 1 5 10 15

His Pro Thr Ser His Met Gln Gln Gln Leu Ala Arg Leu Glu Phe Ile  
 20 25 30

Asn Asp Gln Leu Thr Thr Glu Leu Glu His Val Asn Glu Leu Leu Cys  
 35 40 45

Ser Leu Gly Phe Pro Glu Gly Leu Thr Thr Ile Lys Ala Ile Ala Glu  
 50 55 60

Glu Val Leu Ser Asp Asp Glu Pro Leu Leu Asp

65

70

75

&lt;210&gt; 43

&lt;211&gt; 1269

&lt;212&gt; DNA

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 43

|  |      |
|--|------|
| atgaaaaaac aggtatatca atggtttagcg agtgtggttc ttttagcgct gacaatttca | 60   |
| ggatacgctg aacttcctct ctcggaacaa aaagtaaaaa gtcacactta tacaacttta  | 120  |
| gacgaagtca aagactactt aagtaaacgg ggttttgtag aaacgcgaaa gcaagatggc  | 180  |
| gttttaagaa tagcaggaga tgtttagagcc cggtggttgt atttcagaga agatatcaaa | 240  |
| aaccctcag ataaagataa atacaatccc ttaccagtaa atcgttatcg tagtgaattt   | 300  |
| tatctctata ttgattatcg cgctgagagg aactggctgt cttcaaagat gaattggaca  | 360  |
| gcaattgcag gaggggaaaa cactgcagct ggtgttgata tcaacagagc atttctagga  | 420  |
| tatcgttttt ataagaatcc cgaaacacgt acagatttct ttatggaaat cggacgttct  | 480  |
| ggtttaggag atctctttga gtcagaagtc caattccaaa gtaattttga cggactacat  | 540  |
| atatattgga ctcgagaact ttctaaggac tatccttadc aagtgattgt tcatggaggt  | 600  |
| cctttcgtcg tgaacatgac aaaaaaacat tatgcttggg ttgtagaagg gattctcaat  | 660  |
| cgtttgcta aacagttttt tgtgaaatgt agtgttgctg actggaacac attcgttcct   | 720  |
| tcagaaacct ccactacaga aaaagctgct acaaacgcta tgaaatacaa atactgtgtt  | 780  |
| tggcagtggc tcgtcggaaa gcatagtcag gttccttgga tcaatggaca gaaaaagcct  | 840  |
| ctatatcttt atggagcttt cttaatgaac cctttagcaa aggctacgaa gactacgtta  | 900  |
| aatggaaaag aaaacctagc ttggtttatt ggaggaactt tagggggact cagaaaagct  | 960  |
| ggagactggc ctgccacagt acgttatgag tatgtcgaag ccttgctcgt tccagaaata  | 1020 |
| gatgtttcag ggattggccg tggtaattta ttaaagtttt ggttcgcca agcaattgct   | 1080 |
| gctaactatg atcctaaaga ggctaattgt ttacaaatt ataaaggatt ttccgctcta   | 1140 |
| tatatgtatg gcatcacaga ttctctatca ttcagagctt atggggctta ctccaaacca  | 1200 |
| gcaaacgata aactcggcag tgattttact ttccgaaagt ttgatctagg tataatttca  | 1260 |
| gcgttttaa  | 1269 |

<210> 44  
 <211> 422  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 44

Met Lys Lys Gln Val Tyr Gln Trp Leu Ala Ser Val Val Leu Leu Ala  
 1 5 10 15

Leu Thr Ile Ser Gly Tyr Ala Glu Leu Pro Leu Ser Glu Gln Lys Val  
 20 25 30

Lys Ser His Thr Tyr Thr Thr Leu Asp Glu Val Lys Asp Tyr Leu Ser  
 35 40 45

Lys Arg Gly Phe Val Glu Thr Arg Lys Gln Asp Gly Val Leu Arg Ile  
 50 55 60

Ala Gly Asp Val Arg Ala Arg Trp Leu Tyr Phe Arg Glu Asp Ile Lys  
 65 70 75 80

Asn Pro Ser Asp Lys Asp Lys Tyr Asn Pro Leu Pro Val Asn Arg Tyr  
 85 90 95

Arg Ser Glu Phe Tyr Leu Tyr Ile Asp Tyr Arg Ala Glu Arg Asn Trp  
 100 105 110

Leu Ser Ser Lys Met Asn Trp Thr Ala Ile Ala Gly Gly Glu Asn Thr  
 115 120 125

Ala Ala Gly Val Asp Ile Asn Arg Ala Phe Leu Gly Tyr Arg Phe Tyr  
 130 135 140

Lys Asn Pro Glu Thr Arg Thr Asp Phe Phe Met Glu Ile Gly Arg Ser  
 145 150 155 160

Gly Leu Gly Asp Leu Phe Glu Ser Glu Val Gln Phe Gln Ser Asn Phe  
 165 170 175

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|
| Asp        | Gly        | Leu        | His<br>180 | Ile        | Tyr        | Trp        | Thr        | Arg<br>185 | Glu        | Leu        | Ser        | Lys        | Asp<br>190 | Tyr        | Pro        |  |
| Tyr        | Gln        | Val<br>195 | Ile        | Val        | His        | Gly        | Gly<br>200 | Pro        | Phe        | Val        | Val        | Asn<br>205 | Met        | Thr        | Lys        |  |
| Lys        | His<br>210 | Tyr        | Ala        | Trp        | Val        | Val<br>215 | Glu        | Gly        | Ile        | Leu        | Asn<br>220 | Arg        | Leu        | Pro        | Lys        |  |
| Gln<br>225 | Phe        | Phe        | Val        | Lys        | Cys<br>230 | Ser        | Val        | Val        | Asp        | Trp<br>235 | Asn        | Thr        | Phe        | Val        | Pro<br>240 |  |
| Ser        | Glu        | Thr        | Ser        | Thr<br>245 | Thr        | Glu        | Lys        | Ala        | Ala<br>250 | Thr        | Asn        | Ala        | Met        | Lys<br>255 | Tyr        |  |
| Lys        | Tyr        | Cys        | Val<br>260 | Trp        | Gln        | Trp        | Leu        | Val<br>265 | Gly        | Lys        | His        | Ser        | Gln<br>270 | Val        | Pro        |  |
| Trp        | Ile        | Asn<br>275 | Gly        | Gln        | Lys        | Lys        | Pro<br>280 | Leu        | Tyr        | Leu        | Tyr        | Gly<br>285 | Ala        | Phe        | Leu        |  |
| Met        | Asn<br>290 | Pro        | Leu        | Ala        | Lys        | Ala<br>295 | Thr        | Lys        | Thr        | Thr        | Leu<br>300 | Asn        | Gly        | Lys        | Glu        |  |
| Asn<br>305 | Leu        | Ala        | Trp        | Phe        | Ile<br>310 | Gly        | Gly        | Thr        | Leu        | Gly<br>315 | Gly        | Leu        | Arg        | Lys        | Ala<br>320 |  |
| Gly        | Asp        | Trp        | Ser        | Ala<br>325 | Thr        | Val        | Arg        | Tyr        | Glu<br>330 | Tyr        | Val        | Glu        | Ala        | Leu<br>335 | Ser        |  |
| Val        | Pro        | Glu        | Ile<br>340 | Asp        | Val        | Ser        | Gly        | Ile<br>345 | Gly        | Arg        | Gly        | Asn<br>350 | Leu        | Leu        | Lys        |  |
| Phe        | Trp        | Phe<br>355 | Ala        | Gln        | Ala        | Ile        | Ala<br>360 | Ala        | Asn        | Tyr        | Asp        | Pro<br>365 | Lys        | Glu        | Ala        |  |
| Asn        | Gly<br>370 | Phe        | Thr        | Asn        | Tyr        | Lys<br>375 | Gly        | Phe        | Ser        | Ala        | Leu<br>380 | Tyr        | Met        | Tyr        | Gly        |  |

Ile Thr Asp Ser Leu Ser Phe Arg Ala Tyr Gly Ala Tyr Ser Lys Pro  
 385 390 395 400

Ala Asn Asp Lys Leu Gly Ser Asp Phe Thr Phe Arg Lys Phe Asp Leu  
 405 410 415

Gly Ile Ile Ser Ala Phe  
 420

<210> 45  
 <211> 1596  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 45  
 atgtttgggca aagaagaaga gtttacgtgt aaacaaaagc agtgtttgtc acattttggt 60  
 accaatctga cgtccgatgt atttgcttta aaaaatcttc cagaagtcgt taaggagct 120  
 ttattttcta aatactcccg ttcagtttta ggtttgcgag cacttttggt aaaagaattt 180  
 ctatctaatag aagaggatgg agatgtttgt gacgaagcct atgacttcga aaccgatgta 240  
 cagaaagctg cggactttta ccaaagggtt cttgataatt ttggggatga ttctgtagga 300  
 gagcttggcg gagcccacct ggctatggaa aatgtctcta ttttggctgc taaagtttta 360  
 gaggatgctc gaattggcgg atccccgcta gaaaagtcca caagatacgt ctatttcgat 420  
 caaaaggtac ggggggagta tttatattac cgagacccta ttttgatgac ttcggccttt 480  
 aaagacatgt ttttgggtac ttgtgatttt ttattcgata cctattctgc tttaatccct 540  
 caagttcgtg cctattttga aaaactgtat cctaaagatt ctaaaacacc cgcattctgcc 600  
 tatgccacat cattacgagc taaagtttta gattgtatac ggggacttct tcctgcggca 660  
 actttgacaa atctaggatt tttcggtaac ggtaggtttt ggcaaaatct gattcacaag 720  
 ttacaaggtc ataaccttgc agagttgcga cgtttaggag atgaatccct aacagagctt 780  
 atgaaagtta ttccttcatt tgtaagtaga gccgagcctc atcatcacca tcatcaagct 840  
 atgatgcaat atcgaagagc tttaaaagag cagctcaagg gacttgctga acaagcaaca 900  
 tttagtgagg agatgtcttc ttcaccgagt gttcagttgg tatacggaga ccctgatggc 960  
 atttataaag tagctgctgg atttcttttt ccttattcaa atcgttctct tacagatctc 1020

atagactatt gtaaaaaaat gcctcatgaa gatcttgtac agattttaga gagcagtgtt 1080  
 tctgcaagag aaaaccgccg gcataagtct cctcgtgggt tagaatgcgt agaatttggc 1140  
 tttgatatac ttgctgattt cgggtgcatac cgcgatttgc aacgacatcg gacgctgact 1200  
 caagaacgac agttactctc tacacatcat ggatacaatt ttcctgtgga gcttctagat 1260  
 actcctatgg aaaaatctta tcgagaagct atggagaggg cgaatgaaac ctataatgag 1320  
 attgttcagg agttccctga ggaagctcag tatatgggtc ccatggctta caatatacgt 1380  
 tggtttttcc atgtaaatgc tcgggctttg caatggattt gtgagttacg ctcacagcct 1440  
 caaggctcatc aaaattaccg cactatagct acaggtttag tgcgagaggt tgtcaagttc 1500  
 aatcctatgt acgaattatt tttcaaattt gtagattatt ctgacataga tttaggacgg 1560  
 ttaaatacagg aaatgcgaaa agaaccaacg acctaa 1596

<210> 46  
 <211> 531  
 <212> PRT  
 <213> *Chlamydia pneumoniae*

<400> 46

Met Leu Gly Lys Glu Glu Glu Phe Thr Cys Lys Gln Lys Gln Cys Leu  
 1 5 10 15

Ser His Phe Val Thr Asn Leu Thr Ser Asp Val Phe Ala Leu Lys Asn  
 20 25 30

Leu Pro Glu Val Val Lys Gly Ala Leu Phe Ser Lys Tyr Ser Arg Ser  
 35 40 45

Val Leu Gly Leu Arg Ala Leu Leu Leu Lys Glu Phe Leu Ser Asn Glu  
 50 55 60

Glu Asp Gly Asp Val Cys Asp Glu Ala Tyr Asp Phe Glu Thr Asp Val  
 65 70 75 80

Gln Lys Ala Ala Asp Phe Tyr Gln Arg Val Leu Asp Asn Phe Gly Asp  
 85 90 95

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ser | Val | Gly | Glu | Leu | Gly | Gly | Ala | His | Leu | Ala | Met | Glu | Asn | Val | 100 | 105 | 110 |     |
| Ser | Ile | Leu | Ala | Ala | Lys | Val | Leu | Glu | Asp | Ala | Arg | Ile | Gly | Gly | Ser | 115 | 120 | 125 |     |
| Pro | Leu | Glu | Lys | Ser | Thr | Arg | Tyr | Val | Tyr | Phe | Asp | Gln | Lys | Val | Arg | 130 | 135 | 140 |     |
| Gly | Glu | Tyr | Leu | Tyr | Tyr | Arg | Asp | Pro | Ile | Leu | Met | Thr | Ser | Ala | Phe | 145 | 150 | 155 | 160 |
| Lys | Asp | Met | Phe | Leu | Gly | Thr | Cys | Asp | Phe | Leu | Phe | Asp | Thr | Tyr | Ser | 165 | 170 | 175 |     |
| Ala | Leu | Ile | Pro | Gln | Val | Arg | Ala | Tyr | Phe | Glu | Lys | Leu | Tyr | Pro | Lys | 180 | 185 | 190 |     |
| Asp | Ser | Lys | Thr | Pro | Ala | Ser | Ala | Tyr | Ala | Thr | Ser | Leu | Arg | Ala | Lys | 195 | 200 | 205 |     |
| Val | Leu | Asp | Cys | Ile | Arg | Gly | Leu | Leu | Pro | Ala | Ala | Thr | Leu | Thr | Asn | 210 | 215 | 220 |     |
| Leu | Gly | Phe | Phe | Gly | Asn | Gly | Arg | Phe | Trp | Gln | Asn | Leu | Ile | His | Lys | 225 | 230 | 235 | 240 |
| Leu | Gln | Gly | His | Asn | Leu | Ala | Glu | Leu | Arg | Arg | Leu | Gly | Asp | Glu | Ser | 245 | 250 | 255 |     |
| Leu | Thr | Glu | Leu | Met | Lys | Val | Ile | Pro | Ser | Phe | Val | Ser | Arg | Ala | Glu | 260 | 265 | 270 |     |
| Pro | His | His | His | His | His | Gln | Ala | Met | Met | Gln | Tyr | Arg | Arg | Ala | Leu | 275 | 280 | 285 |     |
| Lys | Glu | Gln | Leu | Lys | Gly | Leu | Ala | Glu | Gln | Ala | Thr | Phe | Ser | Glu | Glu | 290 | 295 | 300 |     |

|            |     |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|-----|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Met<br>305 | Ser | Ser        | Ser        | Pro        | Ser<br>310 | Val        | Gln        | Leu        | Val        | Tyr<br>315 | Gly        | Asp        | Pro        | Asp        | Gly<br>320 |
| Ile        | Tyr | Lys        | Val        | Ala<br>325 | Ala        | Gly        | Phe        | Leu        | Phe<br>330 | Pro        | Tyr        | Ser        | Asn        | Arg<br>335 | Ser        |
| Leu        | Thr | Asp        | Leu<br>340 | Ile        | Asp        | Tyr        | Cys        | Lys<br>345 | Lys        | Met        | Pro        | His        | Glu<br>350 | Asp        | Leu        |
| Val        | Gln | Ile<br>355 | Leu        | Glu        | Ser        | Ser        | Val<br>360 | Ser        | Ala        | Arg        | Glu        | Asn<br>365 | Arg        | Arg        | His        |
| Lys<br>370 | Ser | Pro        | Arg        | Gly        | Leu        | Glu<br>375 | Cys        | Val        | Glu        | Phe        | Gly<br>380 | Phe        | Asp        | Ile        | Leu        |
| Ala<br>385 | Asp | Phe        | Gly        | Ala        | Tyr<br>390 | Arg        | Asp        | Leu        | Gln        | Arg<br>395 | His        | Arg        | Thr        | Leu        | Thr<br>400 |
| Gln        | Glu | Arg        | Gln        | Leu<br>405 | Leu        | Ser        | Thr        | His        | His<br>410 | Gly        | Tyr        | Asn        | Phe        | Pro<br>415 | Val        |
| Glu        | Leu | Leu        | Asp<br>420 | Thr        | Pro        | Met        | Glu        | Lys<br>425 | Ser        | Tyr        | Arg        | Glu        | Ala<br>430 | Met        | Glu        |
| Arg        | Ala | Asn<br>435 | Glu        | Thr        | Tyr        | Asn        | Glu<br>440 | Ile        | Val        | Gln        | Glu        | Phe<br>445 | Pro        | Glu        | Glu        |
| Ala<br>450 | Gln | Tyr        | Met        | Val        | Pro        | Met<br>455 | Ala        | Tyr        | Asn        | Ile        | Arg<br>460 | Trp        | Phe        | Phe        | His        |
| Val<br>465 | Asn | Ala        | Arg        | Ala        | Leu<br>470 | Gln        | Trp        | Ile        | Cys        | Glu<br>475 | Leu        | Arg        | Ser        | Gln        | Pro<br>480 |
| Gln        | Gly | His        | Gln        | Asn<br>485 | Tyr        | Arg        | Thr        | Ile        | Ala<br>490 | Thr        | Gly        | Leu        | Val        | Arg<br>495 | Glu        |
| Val        | Val | Lys        | Phe<br>500 | Asn        | Pro        | Met        | Tyr        | Glu<br>505 | Leu        | Phe        | Phe        | Lys        | Phe<br>510 | Val        | Asp        |

Tyr Ser Asp Ile Asp Leu Gly Arg Leu Asn Gln Glu Met Arg Lys Glu  
515 520 525

Pro Thr Thr  
530

<210> 47  
<211> 1206  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 47  
atgtttattgg taaggaaatg gttgcatact tgtttcaaatt attggattta ctttcttccg 60  
gtggtaacgc tacttcttcc cctagtgtgt tacccttttc tgtcgattag tcaaaaaatt 120  
tatggatact ttgttttttac tacaatttct tctttagggt gggttttttgc attgagacgt 180  
agggaaaatc aattaataaac agcagctgtt cagcttcttc aaacaaaaat tagaaaatta 240  
acagaaaata atgaagggtt aagacaaatt cgagaatctc ttaaagaaca tcagcaagag 300  
agtgtctaac tgcaaattca aagtcagaag cttaaaaaaca gcctatttca tcttcaggggt 360  
ttacttgtga aaactaaggg agaggggcaa aaattagaaa ctttggttact tcatagaaca 420  
gaagagaatc gatgtttgaa aatgcaagta gattctttta ttcaggaatg cggagaaaaa 480  
acagaggaag tacaaacttt aaatcgagag ttggctgaga ctttagccta ccagcaagct 540  
ttaaatgacg agtatcaagc gaccttctct gagcaacgca atatgctgga taagcggcag 600  
atctacattg gaaagctgga aaacaagggt caggatttaa tgtatgagat ccgtaacttg 660  
cttcagttag agtcagacat agcagagaat attccttctc aagaatcgaa tgctgttacg 720  
ggaaatattt ctttacaatt gtctagttag ttaaaaaaaaa ttgcttttaa ggctgaaaac 780  
atagaggcag cctcttcttt aacagcatca cgttaccttc atacagatac gagtgtgcat 840  
aactactctt tagagtgtcg ccagttattt gatagcttaa gagaagaaaa tctcgggatg 900  
ctttttgtct atgctcgtca atcccaacgt gcggtttttg ctaatgcgtt atttaaaacg 960  
tggaacgggggt attgtgcaga agatttttta aaatttggtg gtgacatagt gatttctggg 1020  
ggcaaacagt ggatggagga tcttcattcc tctagagaag aatgctctgg tagattagtg 1080  
attaaaacga aatcacgagg tcatcttcct ttccgttatt gttaaattggc tttgaataaa 1140

ggccctcttt gctatcatgt tttgggggtt ctttatcctc tccataaaga agtgcttcag 1200  
agttga 1206

<210> 48  
<211> 401  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 48

Met Leu Leu Val Arg Lys Trp Leu His Thr Cys Phe Lys Tyr Trp Ile  
1 5 10 15

Tyr Phe Leu Pro Val Val Thr Leu Leu Leu Pro Leu Val Cys Tyr Pro  
20 25 30

Phe Leu Ser Ile Ser Gln Lys Ile Tyr Gly Tyr Phe Val Phe Thr Thr  
35 40 45

Ile Ser Ser Leu Gly Trp Phe Phe Ala Leu Arg Arg Arg Glu Asn Gln  
50 55 60

Leu Lys Thr Ala Ala Val Gln Leu Leu Gln Thr Lys Ile Arg Lys Leu  
65 70 75 80

Thr Glu Asn Asn Glu Gly Leu Arg Gln Ile Arg Glu Ser Leu Lys Glu  
85 90 95

His Gln Gln Glu Ser Ala Gln Leu Gln Ile Gln Ser Gln Lys Leu Lys  
100 105 110

Asn Ser Leu Phe His Leu Gln Gly Leu Leu Val Lys Thr Lys Gly Glu  
115 120 125

Gly Gln Lys Leu Glu Thr Leu Leu Leu His Arg Thr Glu Glu Asn Arg  
130 135 140

Cys Leu Lys Met Gln Val Asp Ser Leu Ile Gln Glu Cys Gly Glu Lys  
145 150 155 160

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Thr | Glu | Glu | Val | Gln | Thr | Leu | Asn | Arg | Glu | Leu | Ala | Glu | Thr | Leu | Ala |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| Tyr | Gln | Gln | Ala | Leu | Asn | Asp | Glu | Tyr | Gln | Ala | Thr | Phe | Ser | Glu | Gln |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Arg | Asn | Met | Leu | Asp | Lys | Arg | Gln | Ile | Tyr | Ile | Gly | Lys | Leu | Glu | Asn |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Lys | Val | Gln | Asp | Leu | Met | Tyr | Glu | Ile | Arg | Asn | Leu | Leu | Gln | Leu | Glu |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |
| Ser | Asp | Ile | Ala | Glu | Asn | Ile | Pro | Ser | Gln | Glu | Ser | Asn | Ala | Val | Thr |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
| Gly | Asn | Ile | Ser | Leu | Gln | Leu | Ser | Ser | Glu | Leu | Lys | Lys | Ile | Ala | Phe |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
| Lys | Ala | Glu | Asn | Ile | Glu | Ala | Ala | Ser | Ser | Leu | Thr | Ala | Ser | Arg | Tyr |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
| Leu | His | Thr | Asp | Thr | Ser | Val | His | Asn | Tyr | Ser | Leu | Glu | Cys | Arg | Gln |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
| Leu | Phe | Asp | Ser | Leu | Arg | Glu | Glu | Asn | Leu | Gly | Met | Leu | Phe | Val | Tyr |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
| Ala | Arg | Gln | Ser | Gln | Arg | Ala | Val | Phe | Ala | Asn | Ala | Leu | Phe | Lys | Thr |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |
| Trp | Thr | Gly | Tyr | Cys | Ala | Glu | Asp | Phe | Leu | Lys | Phe | Gly | Ser | Asp | Ile |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |
| Val | Ile | Ser | Gly | Gly | Lys | Gln | Trp | Met | Glu | Asp | Leu | His | Ser | Ser | Arg |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
| Glu | Glu | Cys | Ser | Gly | Arg | Leu | Val | Ile | Lys | Thr | Lys | Ser | Arg | Gly | His |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |

Leu Pro Phe Arg Tyr Cys Leu Met Ala Leu Asn Lys Gly Pro Leu Cys  
 370 375 380

Tyr His Val Leu Gly Val Leu Tyr Pro Leu His Lys Glu Val Leu Gln  
 385 390 395 400

Ser

<210> 49  
 <211> 675  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 49  
 atgacatcct ggatagaatt acttgataag caaattgaag atcaacatat gttaaagcac 60  
 gaattttatc agcggttggtc tgaaggaaag ttagaaaaac aacaacttca agcttatgcc 120  
 aaagattact atttacatat taaagcattt ccttgttacc tttcagcgct gcatgctcgc 180  
 tgtgatgact tgcagattcg tagacaaatt cttgagaatc tcatggatga agaagctgga 240  
 aatcctaadc acatagattt atggagacag tttgctttat ctcttggagt ttctgaagag 300  
 gagcttgcca atcatgaatt cagtcaggct gctcaagata tggtagcgac atttcgccgc 360  
 ttatgcgaca tgccacaact tgccgtgggt ttaggcgctc tctatactta tgagattcag 420  
 attcctcaag tctgtgtaga gaaaatccgt ggtttgaaag aatattttgg agtttctgct 480  
 cgaggctatg catactttac tgtacatcaa gaagctgata ttaaacadgc cagcgaagag 540  
 aaagaaatgc tacaaacttt ggtaggcaga gagaatcctg atgctgtttt gcaaggatca 600  
 caagaagttt tagatactct atggaacttt ttgagctctt ttattaattc aacggagcct 660  
 tgttcttgta agtag 675

<210> 50  
 <211> 224  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 50

Met Thr Ser Trp Ile Glu Leu Leu Asp Lys Gln Ile Glu Asp Gln His  
 1 5 10 15

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Lys | His | Glu | Phe | Tyr | Gln | Arg | Trp | Ser | Glu | Gly | Lys | Leu | Glu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Lys | Gln | Gln | Leu | Gln | Ala | Tyr | Ala | Lys | Asp | Tyr | Tyr | Leu | His | Ile | Lys |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Ala | Phe | Pro | Cys | Tyr | Leu | Ser | Ala | Leu | His | Ala | Arg | Cys | Asp | Asp | Leu |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Gln | Ile | Arg | Arg | Gln | Ile | Leu | Glu | Asn | Leu | Met | Asp | Glu | Glu | Ala | Gly |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Asn | Pro | Asn | His | Ile | Asp | Leu | Trp | Arg | Gln | Phe | Ala | Leu | Ser | Leu | Gly |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Val | Ser | Glu | Glu | Glu | Leu | Ala | Asn | His | Glu | Phe | Ser | Gln | Ala | Ala | Gln |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asp | Met | Val | Ala | Thr | Phe | Arg | Arg | Leu | Cys | Asp | Met | Pro | Gln | Leu | Ala |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Val | Gly | Leu | Gly | Ala | Leu | Tyr | Thr | Tyr | Glu | Ile | Gln | Ile | Pro | Gln | Val |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Cys | Val | Glu | Lys | Ile | Arg | Gly | Leu | Lys | Glu | Tyr | Phe | Gly | Val | Ser | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Arg | Gly | Tyr | Ala | Tyr | Phe | Thr | Val | His | Gln | Glu | Ala | Asp | Ile | Lys | His |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ala | Ser | Glu | Glu | Lys | Glu | Met | Leu | Gln | Thr | Leu | Val | Gly | Arg | Glu | Asn |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Pro | Asp | Ala | Val | Leu | Gln | Gly | Ser | Gln | Glu | Val | Leu | Asp | Thr | Leu | Trp |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Asn | Phe | Leu | Ser | Ser | Phe | Ile | Asn | Ser | Thr | Glu | Pro | Cys | Ser | Cys | Lys |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |

<210> 51  
 <211> 1287  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 51  
 atggatataa aaaaactctt ttgcttattt ctatgttctt ctctaattgc catgagtcctc 60  
 atttatggga aaacaggtga ctatgagaaa ctcaccctta cagggatcaa tatcattgat 120  
 agaaacggcc tgtcagaaac tatttgctct aaagagaagc taaagaaata caccaaggta 180  
 gactttcttg ctccccagcc ctatcaaaag gtcatgagga tgtataaaaa caaacgcgga 240  
 gataacggtt cttgtttaac agcctatcac actaacgggc aaattaagca gtacctggag 300  
 tgtctcaata atcgtgctta tggaagatat cgtgaatggc acgtcaacgg gaatatcaaa 360  
 atccaagctg aggttatcgg aggtattgcg gatcttcac cctcagcaga gtctggctgg 420  
 ctatttgatc aaactacatt tgcctataat gatgaaggta tcttagaagc cgctatcgtc 480  
 tatgaaaaag ggctgctcga aggatcttcg gtgtattacc atactaatgg gaatatttgg 540  
 aaagagtgtc cctatcataa gggagttcct caaggtaa at tcctgacata cacatcttcg 600  
 gggaaactgc tcaaagaaca gaattaccaa caaggcaaaa gacacgggtc ttcgattcgc 660  
 tacagcgaag attccgaaga agatgtttta gcctgggaag aatatcatga gggacgactc 720  
 ctaaaagcag agtacttaga tcctcaaact cacgaaatct atgcgactat acacgaaggg 780  
 aacggcattc aagcaatcta cggcaagtat gccgttatag aaactagggc attttaccga 840  
 ggggaacctt atggaaaagt taccagattc gacaactccg gaacacagat tgtccaaacg 900  
 tataaccttt tgcaaggcgc gaagcacgga gaagaatttt tcttttatcc tgagacaggg 960  
 aaaccaagc tgcttcttaa ttggcatgaa ggaattttta atgggatagt aaaaacttgg 1020  
 tatcccggag gaaccttaga aagttgtaaa gaactcgtaa ataacaaaaa atccgggtta 1080  
 ctgaccattt actaccctga aggacagatc atggcgaccg aagagtatga taatgatctt 1140  
 ctaattaaag gagagtactt ccgccctgga gaccgtcatc cctactctaa aatagatcgt 1200  
 gggtgtggga ctgcagtatt tttctcgtcg gcgggaacta ttactaaaaa aatcccctat 1260  
 caggacggca aacctttgct caactag 1287

<210> 52

<211> 428  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 52

Met Asp Ile Lys Lys Leu Phe Cys Leu Phe Leu Cys Ser Ser Leu Ile  
 1 5 10 15

Ala Met Ser Pro Ile Tyr Gly Lys Thr Gly Asp Tyr Glu Lys Leu Thr  
 20 25 30

Leu Thr Gly Ile Asn Ile Ile Asp Arg Asn Gly Leu Ser Glu Thr Ile  
 35 40 45

Cys Ser Lys Glu Lys Leu Lys Lys Tyr Thr Lys Val Asp Phe Leu Ala  
 50 55 60

Pro Gln Pro Tyr Gln Lys Val Met Arg Met Tyr Lys Asn Lys Arg Gly  
 65 70 75 80

Asp Asn Val Ser Cys Leu Thr Ala Tyr His Thr Asn Gly Gln Ile Lys  
 85 90 95

Gln Tyr Leu Glu Cys Leu Asn Asn Arg Ala Tyr Gly Arg Tyr Arg Glu  
 100 105 110

Trp His Val Asn Gly Asn Ile Lys Ile Gln Ala Glu Val Ile Gly Gly  
 115 120 125

Ile Ala Asp Leu His Pro Ser Ala Glu Ser Gly Trp Leu Phe Asp Gln  
 130 135 140

Thr Thr Phe Ala Tyr Asn Asp Glu Gly Ile Leu Glu Ala Ala Ile Val  
 145 150 155 160

Tyr Glu Lys Gly Leu Leu Glu Gly Ser Ser Val Tyr Tyr His Thr Asn  
 165 170 175

Gly Asn Ile Trp Lys Glu Cys Pro Tyr His Lys Gly Val Pro Gln Gly  
 180 185 190

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Phe | Leu | Thr | Tyr | Thr | Ser | Ser | Gly | Lys | Leu | Leu | Lys | Glu | Gln | Asn |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Tyr | Gln | Gln | Gly | Lys | Arg | His | Gly | Leu | Ser | Ile | Arg | Tyr | Ser | Glu | Asp |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ser | Glu | Glu | Asp | Val | Leu | Ala | Trp | Glu | Glu | Tyr | His | Glu | Gly | Arg | Leu |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Leu | Lys | Ala | Glu | Tyr | Leu | Asp | Pro | Gln | Thr | His | Glu | Ile | Tyr | Ala | Thr |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Ile | His | Glu | Gly | Asn | Gly | Ile | Gln | Ala | Ile | Tyr | Gly | Lys | Tyr | Ala | Val |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Ile | Glu | Thr | Arg | Ala | Phe | Tyr | Arg | Gly | Glu | Pro | Tyr | Gly | Lys | Val | Thr |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Arg | Phe | Asp | Asn | Ser | Gly | Thr | Gln | Ile | Val | Gln | Thr | Tyr | Asn | Leu | Leu |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Gln | Gly | Ala | Lys | His | Gly | Glu | Glu | Phe | Phe | Phe | Tyr | Pro | Glu | Thr | Gly |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Lys | Pro | Lys | Leu | Leu | Leu | Asn | Trp | His | Glu | Gly | Ile | Leu | Asn | Gly | Ile |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Val | Lys | Thr | Trp | Tyr | Pro | Gly | Gly | Thr | Leu | Glu | Ser | Cys | Lys | Glu | Leu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Val | Asn | Asn | Lys | Lys | Ser | Gly | Leu | Leu | Thr | Ile | Tyr | Tyr | Pro | Glu | Gly |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Gln | Ile | Met | Ala | Thr | Glu | Glu | Tyr | Asp | Asn | Asp | Leu | Leu | Ile | Lys | Gly |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Glu | Tyr | Phe | Arg | Pro | Gly | Asp | Arg | His | Pro | Tyr | Ser | Lys | Ile | Asp | Arg |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |

Gly Cys Gly Thr Ala Val Phe Phe Ser Ser Ala Gly Thr Ile Thr Lys  
405 410 415

Lys Ile Pro Tyr Gln Asp Gly Lys Pro Leu Leu Asn  
420 425

<210> 53  
<211> 795  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 53  
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aataaacagg gattgattgc aggcccagaa gaagaaaagg tagcgtttct tgtacgtagc 120  
aatgctatgc tagatgcagg acccgaaacc cccgcgtcgt ttcctgaatc tttaagggaa 180  
caattcgata ttttccctga gtatgttgaa gtgctctact ctaatgaagg attagatgtc 240  
tggaagcag gatgtacgtg gattctaaat aatgaagtga ccatccaact gcgtaaacad 300  
caccggaaag cttcgcgatg gctaggaatg tattccagag atgaggtact cgctcacgaa 360  
gccgtgcatg ctgtgagaat gaaatttcat gagcctgtct ttgaagaggt gttagcttat 420  
caaacttctc gttgggggtg gagaagggtt ttcggtcctc tatttcgctc tccaggagag 480  
agctacttgc tattattctt caccatttta ggtttaggaa tctccttatg gtatcctgcc 540  
ggatatactga ttatgctggg ttacctatg tattttttga tgcgattgtg catggcgcag 600  
agctatttgt atcggggccat gaaaaagatt cgtaaaatgc tcggagtacc tcccttatgg 660  
gtgctgctaa ggctgacgga taaggaaata aaaatgtttg ctaaagagcc tattcctggt 720  
ttggaacact atgctagaaa acgaaagctt gaaaatgtcc gttggaagca aatttatcaa 780  
tcctactttg tttaa 795

<210> 54  
<211> 264  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 54

Val Glu Lys Leu Glu Phe Val Thr Ser Leu Ser Ser Pro Asp Asp Asp  
1 5 10 15

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ile | Thr | Phe | Asn | Lys | Gln | Gly | Leu | Ile | Ala | Gly | Pro | Glu | Glu | Glu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Lys | Val | Ala | Phe | Leu | Val | Arg | Ser | Asn | Ala | Met | Leu | Asp | Ala | Gly | Pro |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Glu | Thr | Pro | Ala | Ser | Phe | Pro | Glu | Ser | Leu | Arg | Glu | Gln | Phe | Asp | Ile |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Phe | Pro | Glu | Tyr | Val | Glu | Val | Leu | Tyr | Ser | Asn | Glu | Gly | Leu | Asp | Val |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Trp | Glu | Ala | Gly | Cys | Thr | Trp | Ile | Leu | Asn | Asn | Glu | Val | Thr | Ile | Gln |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Arg | Lys | His | His | Arg | Lys | Ala | Ser | Arg | Trp | Leu | Gly | Met | Tyr | Ser |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Arg | Asp | Glu | Val | Leu | Ala | His | Glu | Ala | Val | His | Ala | Val | Arg | Met | Lys |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Phe | His | Glu | Pro | Val | Phe | Glu | Glu | Val | Leu | Ala | Tyr | Gln | Thr | Ser | Arg |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Trp | Gly | Trp | Arg | Arg | Phe | Phe | Gly | Pro | Leu | Phe | Arg | Ser | Pro | Gly | Glu |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Ser | Tyr | Leu | Leu | Leu | Phe | Phe | Thr | Ile | Leu | Gly | Leu | Gly | Ile | Ser | Leu |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Trp | Tyr | Pro | Ala | Gly | Ile | Leu | Ile | Met | Leu | Val | Leu | Pro | Met | Tyr | Phe |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Leu | Met | Arg | Leu | Cys | Met | Ala | Gln | Ser | Tyr | Leu | Tyr | Arg | Ala | Met | Lys |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Lys | Ile | Arg | Lys | Met | Leu | Gly | Val | Pro | Pro | Leu | Trp | Val | Leu | Leu | Arg |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |

Leu Thr Asp Lys Glu Ile Lys Met Phe Ala Lys Glu Pro Ile Pro Val  
 225 230 235 240

Leu Glu His Tyr Ala Arg Lys Arg Lys Leu Glu Asn Val Arg Trp Lys  
 245 250 255

Gln Ile Tyr Gln Ser Tyr Phe Val  
 260

<210> 55  
 <211> 234  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 55  
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 gtagtgagta tggagatgct cttaactact caacagcttc cttccgcaga agggatgccc 120  
 tcggttgcta atttggaagc ggatttttta cgagcagaag ctctgtagc agaaatgcga 180  
 gaaattcgtg gttgcttgga gcaatctttg cgaacactag tccctagtga gtag 234

<210> 56  
 <211> 77  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 56

Met Asn Glu Gly Ile His Ser Val Cys Phe Gln Lys Thr Pro Arg Leu  
 1 5 10 15

Thr Ala Lys Ser Val Val Ser Met Glu Met Leu Leu Thr Thr Gln Gln  
 20 25 30

Leu Pro Ser Ala Glu Gly Met Pro Ser Val Ala Asn Leu Glu Ala Asp  
 35 40 45

Phe Leu Arg Ala Glu Ala Leu Leu Ala Glu Met Arg Glu Ile Arg Gly  
 50 55 60

Cys Leu Glu Gln Ser Leu Arg Thr Leu Val Pro Ser Glu  
 65 70 75

<210> 57  
 <211> 1815  
 <212> DNA  
 <213> *Chlamydia pneumoniae*

<400> 57  
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 ctactcctca atccttatggc cgtaggtttt ttctcatttt ctgccgctaa agcaaattta 120  
 gtacaggtcc tccatacccg tgctacgaac ttaagtatag aattcgaaaa aaaactgacg 180  
 atacacaagc ttttcctcga tagacttgcc aacacattag ccttaaaaatc ctatgcatct 240  
 ccttctgcag agccctatgc acaggcatac aatgagatga tggcactctc caatacagac 300  
 ttttccttat gccttataga tccctttgat ggatctgtaa ggacgaaaaa tcctggagac 360  
 cctttcattc gctatctaaa acagcatcct gaaatgaaga aaaagctatc cgcagctgta 420  
 gggaaagcct ttttattgac cattccaggt aaaccacttt tacattatct tattctagtt 480  
 gaagatgtcg catcttgga ttctacaacg acttcaggac tgcttgtaag tttctatccc 540  
 atgtcttttt tacagaaaga tttattccaa tccttacaca tcaccaaagg aaatatctgc 600  
 cttgtaaata agtatggcga ggtcctcttc tgtgctcagg acagtgaatc ttcttttgta 660  
 ttttctctag atctccctaa tttaccgcaa ttccaagcaa gaagcccctc tgccatagaa 720  
 attgagaaag cttctggaat tcttggtggg gagaacctaa tcacagtga tatcaacaag 780  
 aaacgctacc taggattggc actgaataaa attcctatcc aaggaccta cactctatct 840  
 ttagttccag tttctgatct catccaatcc gccttgaaag ttctctcaa tatttgtttt 900  
 ttctatgtac ttgctttcct cctcatgtgg tggattttct ctaagatcaa caccaaactt 960  
 aacaagcctc ttcaagaact gaccttctgt atggaagctg cctggcgagg aaaccataac 1020  
 gtgaggtttg aaccccagcc ttacggttat gaattcaatg aactaggaaa tattttcaat 1080  
 tgcactctcc tactcttatt gaattccatt gagaaagcag atatcgatta ccattcaggc 1140  
 gaaaaattac aaaaagaatt agggatttta tcttcactac aaagtgcgtt actaagtccg 1200  
 gatttcccta cgttccctaa agttaccttt agttcccaac atctccggag aaggcaactt 1260  
 tccggtcatt ttaatggttg gacagttcaa gatggtggcg ataccctttt agggatcata 1320  
 gggctcgctg gcgatattgg tcttccttcc tatctctatg ctttatccgc acggagtctt 1380

```

tttcttgcct atgcttcctc ggacgtttcg ttacaaaaaa tcagcaagga tactgccgac 1440
agcttctcaa aaacaacaga aggcaatgag gctgtagttg ctatgacttt cattaaatat 1500
gtagaaaaag atcgatctct agagctcctc tcgttaagcg agggagctcc taccatgttt 1560
ctacaacgag gagaatcttt cgtacgtctc cccttagaga ctcaccaagc tctacagcct 1620
ggagatcggt tgatctgcct cactggagga gaagacatcc tcaagtactt ttctcagctt 1680
cctattgaag agctcttaaa agatccttta aaccctctaa atacagagaa tcttattgat 1740
tctctaacca tgatgttaaa caacgaaacc gaacattctg cagatggaac tctgaccatc 1800
ctttcatttt cataa 1815

```

```

<210> 58
<211> 604
<212> PRT
<213> Chlamydia pneumoniae

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<400> 58

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Met Lys His Thr Phe Thr Lys Arg Val Leu Phe Phe Phe Phe Leu Val
1          5          10          15

```

```

Ile Pro Ile Pro Leu Leu Leu Asn Leu Met Val Val Gly Phe Phe Ser
          20          25          30

```

```

Phe Ser Ala Ala Lys Ala Asn Leu Val Gln Val Leu His Thr Arg Ala
          35          40          45

```

```

Thr Asn Leu Ser Ile Glu Phe Glu Lys Lys Leu Thr Ile His Lys Leu
          50          55          60

```

```

Phe Leu Asp Arg Leu Ala Asn Thr Leu Ala Leu Lys Ser Tyr Ala Ser
65          70          75          80

```

```

Pro Ser Ala Glu Pro Tyr Ala Gln Ala Tyr Asn Glu Met Met Ala Leu
          85          90          95

```

```

Ser Asn Thr Asp Phe Ser Leu Cys Leu Ile Asp Pro Phe Asp Gly Ser
          100          105          110

```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Arg | Thr | Lys | Asn | Pro | Gly | Asp | Pro | Phe | Ile | Arg | Tyr | Leu | Lys | Gln |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| His | Pro | Glu | Met | Lys | Lys | Lys | Leu | Ser | Ala | Ala | Val | Gly | Lys | Ala | Phe |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Leu | Leu | Thr | Ile | Pro | Gly | Lys | Pro | Leu | Leu | His | Tyr | Leu | Ile | Leu | Val |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Asp | Val | Ala | Ser | Trp | Asp | Ser | Thr | Thr | Thr | Ser | Gly | Leu | Leu | Val |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ser | Phe | Tyr | Pro | Met | Ser | Phe | Leu | Gln | Lys | Asp | Leu | Phe | Gln | Ser | Leu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| His | Ile | Thr | Lys | Gly | Asn | Ile | Cys | Leu | Val | Asn | Lys | Tyr | Gly | Glu | Val |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Leu | Phe | Cys | Ala | Gln | Asp | Ser | Glu | Ser | Ser | Phe | Val | Phe | Ser | Leu | Asp |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Leu | Pro | Asn | Leu | Pro | Gln | Phe | Gln | Ala | Arg | Ser | Pro | Ser | Ala | Ile | Glu |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ile | Glu | Lys | Ala | Ser | Gly | Ile | Leu | Gly | Gly | Glu | Asn | Leu | Ile | Thr | Val |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ser | Ile | Asn | Lys | Lys | Arg | Tyr | Leu | Gly | Leu | Val | Leu | Asn | Lys | Ile | Pro |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ile | Gln | Gly | Thr | Tyr | Thr | Leu | Ser | Leu | Val | Pro | Val | Ser | Asp | Leu | Ile |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Gln | Ser | Ala | Leu | Lys | Val | Pro | Leu | Asn | Ile | Cys | Phe | Phe | Tyr | Val | Leu |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Phe | Leu | Leu | Met | Trp | Trp | Ile | Phe | Ser | Lys | Ile | Asn | Thr | Lys | Leu |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Lys | Pro | Leu | Gln | Glu | Leu | Thr | Phe | Cys | Met | Glu | Ala | Ala | Trp | Arg |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Gly | Asn | His | Asn | Val | Arg | Phe | Glu | Pro | Gln | Pro | Tyr | Gly | Tyr | Glu | Phe |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Asn | Glu | Leu | Gly | Asn | Ile | Phe | Asn | Cys | Thr | Leu | Leu | Leu | Leu | Leu | Asn |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ser | Ile | Glu | Lys | Ala | Asp | Ile | Asp | Tyr | His | Ser | Gly | Glu | Lys | Leu | Gln |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Lys | Glu | Leu | Gly | Ile | Leu | Ser | Ser | Leu | Gln | Ser | Ala | Leu | Leu | Ser | Pro |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Asp | Phe | Pro | Thr | Phe | Pro | Lys | Val | Thr | Phe | Ser | Ser | Gln | His | Leu | Arg |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Arg | Arg | Gln | Leu | Ser | Gly | His | Phe | Asn | Gly | Trp | Thr | Val | Gln | Asp | Gly |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Gly | Asp | Thr | Leu | Leu | Gly | Ile | Ile | Gly | Leu | Ala | Gly | Asp | Ile | Gly | Leu |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Pro | Ser | Tyr | Leu | Tyr | Ala | Leu | Ser | Ala | Arg | Ser | Leu | Phe | Leu | Ala | Tyr |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Ala | Ser | Ser | Asp | Val | Ser | Leu | Gln | Lys | Ile | Ser | Lys | Asp | Thr | Ala | Asp |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Ser | Phe | Ser | Lys | Thr | Thr | Glu | Gly | Asn | Glu | Ala | Val | Val | Ala | Met | Thr |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Phe | Ile | Lys | Tyr | Val | Glu | Lys | Asp | Arg | Ser | Leu | Glu | Leu | Leu | Ser | Leu |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Ser | Glu | Gly | Ala | Pro | Thr | Met | Phe | Leu | Gln | Arg | Gly | Glu | Ser | Phe | Val |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |

Arg Leu Pro Leu Glu Thr His Gln Ala Leu Gln Pro Gly Asp Arg Leu  
530 535 540

Ile Cys Leu Thr Gly Gly Glu Asp Ile Leu Lys Tyr Phe Ser Gln Leu  
545 550 555 560

Pro Ile Glu Glu Leu Leu Lys Asp Pro Leu Asn Pro Leu Asn Thr Glu  
565 570 575

Asn Leu Ile Asp Ser Leu Thr Met Met Leu Asn Asn Glu Thr Glu His  
580 585 590

Ser Ala Asp Gly Thr Leu Thr Ile Leu Ser Phe Ser  
595 600

<210> 59  
<211> 1170  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 59  
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gaagaatcgt atcatccttc tgtagctaca actgtagatt atgtagatgc cacgacactt 120  
tcccgcacatc ttacagtctt aaaagatgtg ataaaagaag ctcgaaactt agatttaggg 180  
aaggcattcc tgacatctat gaaacagggt tttataaata cgggtacgga acttgccatt 240  
atacaagcat ctctggcaga tcagagtagt cgcgagtcgc gtaagaagga agagaagatc 300  
ttccatcagc acttaggaaa ggcagcccca caagcggcaa cagcaacttc aggagtgcag 360  
cctactgcgg atcctgttgc tgataagatg cctttacaat ctgcatttgc ctatgttctc 420  
cttgataagt acattcctgc tcaagaggaa gccctttatg ctcttggaag ggagttaaac 480  
ctatcaggat atgcgcaaaa tttattttagt cctcttttag atatgattaa gagctttaac 540  
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aaagcaaagt tgagtctgac tgatgcacag aagaaacaaa ttgaggatat cattgccagc 780

|  |      |
|--|------|
| tatacgaaat ctttagatgt gattcataca cagttaactg atgtgatgac aaatttagca  | 840  |
| tccataacct ttgttcctgg tttaaataaa tatgatcctt cgtatcgcat tgttggtggg  | 900  |
| gatttatcta tcattgcctt gcagaatgac gagaaggtag ttgtcgatgg taaggatggat | 960  |
| atcacgactg ctgtgaatga aggaggccta cttaatttct tcactacagt ccttacggat  | 1020 |
| gtgcagaatt atggagactt agctcaaacg caacagctga tgttggactt agagcttaag  | 1080 |
| gcgatgcaac aacaatggag tttagatatct gcatctttga aattattgaa tgggatgtat | 1140 |
| accacagtaa tttctggatt taaaaactaa                                   | 1170 |

<210> 60  
 <211> 389  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 60

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | His | Pro | Lys | Ile | Glu | Lys | Arg | Asn | Ser | Leu | Pro | Leu | Thr | Ala | Val |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Pro | Val | Phe | Glu | Glu | Ser | Tyr | His | Pro | Ser | Val | Ala | Thr | Thr | Val |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Tyr | Val | Asp | Ala | Thr | Thr | Leu | Ser | Arg | His | Leu | Thr | Val | Leu | Lys |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Val | Ile | Lys | Glu | Ala | Arg | Asn | Leu | Asp | Leu | Gly | Lys | Ala | Phe | Leu |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Ser | Met | Lys | Gln | Gly | Phe | Ile | Asn | Thr | Gly | Thr | Glu | Leu | Ala | Ile |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Gln | Ala | Ser | Leu | Ala | Asp | Gln | Ser | Ser | Arg | Glu | Ser | Arg | Lys | Lys |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Glu | Lys | Ile | Phe | His | Gln | His | Leu | Gly | Lys | Ala | Ala | Pro | Gln | Ala |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Thr | Ala | Thr | Ser | Gly | Val | Gln | Pro | Thr | Ala | Asp | Pro | Val | Ala | Asp |
|     |     |     |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Met | Pro | Leu | Gln | Ser | Ala | Phe | Ala | Tyr | Val | Leu | Leu | Asp | Lys | Tyr | 130 | 135 | 140 |     |
| Ile | Pro | Ala | Gln | Glu | Glu | Ala | Leu | Tyr | Ala | Leu | Gly | Arg | Glu | Leu | Asn | 145 | 150 | 155 | 160 |
| Leu | Ser | Gly | Tyr | Ala | Gln | Asn | Leu | Phe | Ser | Pro | Leu | Leu | Asp | Met | Ile | 165 | 170 | 175 |     |
| Lys | Ser | Phe | Asn | Ser | Ala | Pro | Ile | Asn | Tyr | Asn | Leu | Gly | Ser | Tyr | Ile | 180 | 185 | 190 |     |
| Ser | Gln | Thr | Ser | Gly | Thr | Ala | Asn | Phe | Ala | Tyr | Gly | Tyr | Glu | Met | Ile | 195 | 200 | 205 |     |
| Leu | Ser | Arg | Tyr | Asn | Asn | Glu | Val | Ser | Gln | Cys | Arg | Leu | Asp | Ile | Ala | 210 | 215 | 220 |     |
| Ser | Thr | Val | Lys | Ala | Lys | Ala | Ala | Leu | Ala | Asn | Met | Ser | Ala | Ser | Val | 225 | 230 | 235 | 240 |
| Lys | Ala | Asn | Val | Ser | Leu | Thr | Asp | Ala | Gln | Lys | Lys | Gln | Ile | Glu | Asp | 245 | 250 | 255 |     |
| Ile | Ile | Ala | Ser | Tyr | Thr | Lys | Ser | Leu | Asp | Val | Ile | His | Thr | Gln | Leu | 260 | 265 | 270 |     |
| Thr | Asp | Val | Met | Thr | Asn | Leu | Ala | Ser | Ile | Thr | Phe | Val | Pro | Gly | Leu | 275 | 280 | 285 |     |
| Asn | Lys | Tyr | Asp | Pro | Ser | Tyr | Arg | Ile | Val | Gly | Gly | Asp | Leu | Ser | Ile | 290 | 295 | 300 |     |
| Ile | Ala | Leu | Gln | Asn | Asp | Glu | Lys | Val | Leu | Val | Asp | Gly | Lys | Val | Asp | 305 | 310 | 315 | 320 |
| Ile | Thr | Thr | Ala | Val | Asn | Glu | Gly | Gly | Leu | Leu | Asn | Phe | Phe | Thr | Thr | 325 | 330 | 335 |     |

Val Leu Thr Asp Val Gln Asn Tyr Gly Asp Leu Ala Gln Thr Gln Gln  
 340 345 350

Leu Met Leu Asp Leu Glu Leu Lys Ala Met Gln Gln Gln Trp Ser Leu  
 355 360 365

Val Ser Ala Ser Leu Lys Leu Leu Asn Gly Met Tyr Thr Thr Val Ile  
 370 375 380

Ser Gly Phe Lys Asn  
 385

<210> 61  
 <211> 537  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 61  
 gtgacaacac cacaatctcc tggttcgctt tctcaatctc accttcctca tccacatgat 60  
 ccttgggata cagaacctac aagtcttccc gaagatccga atgataaggc aagccaagaa 120  
 ctccattcgt tagttcatct ctttcgcaag ctatccattc acctacttag tgaagtcgaa 180  
 aaaacagtac aacagctaaa acccgacctc ctagaactgg ctcttctcat ctgtgaaaaa 240  
 tttctctata agaagctaga aaatcctcaa gaactggccc tgctcctctc taccgcgctc 300  
 caaagacata cgacattaag atctctgact cccatcaaag tatttctcca tcccgaggat 360  
 ctcaaaacac ttacagattg gatctccacc cacgaactcc ccatgattaa gcatgctgag 420  
 tttttccctg acacttcttg tagacgatca ggattcaaaa tagaaacccc taacggaatt 480  
 ctgagacaag aaatcagcga agaactagac catctacttt ctgttttgac agcatga 537

<210> 62  
 <211> 178  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 62

Val Thr Thr Pro Gln Ser Pro Gly Ser Leu Ser Gln Ser His Leu Pro  
 1 5 10 15

His Pro His Asp Pro Trp Asp Thr Glu Pro Thr Ser Leu Pro Glu Asp  
20 25 30

Pro Asn Asp Lys Ala Ser Gln Glu Leu His Ser Leu Val His Leu Phe  
35 40 45

Arg Lys Leu Ser Ile His Leu Leu Ser Glu Val Glu Lys Thr Val Gln  
50 55 60

Gln Leu Lys Pro Asp Leu Leu Glu Leu Ala Leu Leu Ile Cys Glu Lys  
65 70 75 80

Phe Leu Tyr Lys Lys Leu Glu Asn Pro Gln Glu Leu Ala Leu Leu Leu  
85 90 95

Ser Thr Ala Leu Gln Arg His Thr Thr Leu Arg Ser Leu Thr Pro Ile  
100 105 110

Lys Val Phe Leu His Pro Glu Asp Leu Lys Thr Leu Thr Asp Trp Ile  
115 120 125

Ser Thr His Glu Leu Pro Met Ile Lys His Ala Glu Phe Phe Pro Asp  
130 135 140

Thr Ser Cys Arg Arg Ser Gly Phe Lys Ile Glu Thr Pro Asn Gly Ile  
145 150 155 160

Leu Arg Gln Glu Ile Ser Glu Glu Leu Asp His Leu Leu Ser Val Leu  
165 170 175

Thr Ala

<210> 63

<211> 798

<212> DNA

<213> Chlamydia pneumoniae

<400> 63

atgcaagggtt ttttcccttt agcttctgga tccaaaggga attctgctta tctaggcacg

60

gattcttgta agattcttat tgatttagga gtgagcaagc aagtcgtcac tcgggaatta 120  
ctctctatga atatcgatcc tgaagatatt caggcaattt ttgttacgca cgaacattct 180  
gatcatatct ccgggattaa aagttttgtt aaggcgtata acactcccat tgtttgcaac 240  
ttggagacgg ctctgtgcttt atgccatcta ctagatagcc atccagaatt caaaatattt 300  
tccacaggggt cttcattttg ttttcaagat ctogaagtac agacgttcaa tgtacctcat 360  
gatgctgtag atcctgtggc ttttattttt cattatcgcg aagagaaact gggtttttgc 420  
acagatttag gttgggtcac ctcttggatc acacatgaac tctatgattg tgattactta 480  
ttaattgagt ccaatcattc ccctgaattg gtacgtcaat ctcaacgtcc tgatgtttac 540  
aaaaagcgtg tattgagtaa attaggtcat atttctaacc aagagtgtgg tcagctttta 600  
caaaagatta tcaactccgaa gttaaagaag ttatatcttg ctcacctgtc taccgagtgt 660  
aacactgcgg agctagcact ttctacagta tctgaatcga tagcttctat cacttctata 720  
gcaccagaaa ttgcattagc gcagggcatt acatctccaa tatacttttc tcgtcttgag 780  
gttgcattgtc cacggtaa 798

<210> 64  
<211> 265  
<212> PRT  
<213> *Chlamydia pneumoniae*

<400> 64

Met Gln Gly Phe Phe Pro Leu Ala Ser Gly Ser Lys Gly Asn Ser Ala  
1 5 10 15

Tyr Leu Gly Thr Asp Ser Cys Lys Ile Leu Ile Asp Leu Gly Val Ser  
20 25 30

Lys Gln Val Val Thr Arg Glu Leu Leu Ser Met Asn Ile Asp Pro Glu  
35 40 45

Asp Ile Gln Ala Ile Phe Val Thr His Glu His Ser Asp His Ile Ser  
50 55 60

Gly Ile Lys Ser Phe Val Lys Ala Tyr Asn Thr Pro Ile Val Cys Asn  
65 70 75 80

Leu Glu Thr Ala Arg Ala Leu Cys His Leu Leu Asp Ser His Pro Glu  
85 90 95

Phe Lys Ile Phe Ser Thr Gly Ser Ser Phe Cys Phe Gln Asp Leu Glu  
100 105 110

Val Gln Thr Phe Asn Val Pro His Asp Ala Val Asp Pro Val Ala Phe  
115 120 125

Ile Phe His Tyr Arg Glu Glu Lys Leu Gly Phe Cys Thr Asp Leu Gly  
130 135 140

Trp Val Thr Ser Trp Ile Thr His Glu Leu Tyr Asp Cys Asp Tyr Leu  
145 150 155 160

Leu Ile Glu Ser Asn His Ser Pro Glu Leu Val Arg Gln Ser Gln Arg  
165 170 175

Pro Asp Val Tyr Lys Lys Arg Val Leu Ser Lys Leu Gly His Ile Ser  
180 185 190

Asn Gln Glu Cys Gly Gln Leu Leu Gln Lys Ile Ile Thr Pro Lys Leu  
195 200 205

Lys Lys Leu Tyr Leu Ala His Leu Ser Thr Glu Cys Asn Thr Ala Glu  
210 215 220

Leu Ala Leu Ser Thr Val Ser Glu Ser Ile Ala Ser Ile Thr Ser Ile  
225 230 235 240

Ala Pro Glu Ile Ala Leu Ala Gln Gly Ile Thr Ser Pro Ile Tyr Phe  
245 250 255

Ser Arg Leu Glu Val Ala Cys Pro Arg  
260 265

<210> 65  
<211> 429  
<212> DNA

<213> Chlamydia pneumoniae

<400> 65

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atggaagagt ttgtagcata tattgttaag aatttagtta ctaatcctga agctgttgaa      60
attcgttcta ttgaagacga ggataacgaa tctattaagt tagaaattcg tgtcgcagca      120
gaggatattg ggaaaattat tggaagaaga gggaacacaa tacatgcgct aagaacgatt      180
cttagacgtg tatgttctag attaaaaaag aaagtgcaga tagatttggt tcagcctgaa      240
aatggaactg atgtgattgc tgatcaagat tacatctgtg ataatgactc ttctaactct      300
actgaagata ctttcggcga gtctgacacc tgctgcagtg gacactgtca ttacgacgaa      360
gatcttaatc aagaagaaca agaagaaggc aatatgcatc attcttgcca atgtagtaac      420
caccattaa                                         429
```

<210> 66

<211> 142

<212> PRT

<213> Chlamydia pneumoniae

<400> 66

```
Met Glu Glu Phe Val Ala Tyr Ile Val Lys Asn Leu Val Thr Asn Pro
1          5          10          15
```

```
Glu Ala Val Glu Ile Arg Ser Ile Glu Asp Glu Asp Asn Glu Ser Ile
          20          25          30
```

```
Lys Leu Glu Ile Arg Val Ala Ala Glu Asp Ile Gly Lys Ile Ile Gly
          35          40          45
```

```
Arg Arg Gly Asn Thr Ile His Ala Leu Arg Thr Ile Leu Arg Arg Val
          50          55          60
```

```
Cys Ser Arg Leu Lys Lys Lys Val Gln Ile Asp Leu Val Gln Pro Glu
65          70          75          80
```

```
Asn Gly Thr Asp Val Ile Ala Asp Gln Asp Tyr Ile Cys Asp Asn Asp
          85          90          95
```

```
Ser Ser Asn Ser Thr Glu Asp Thr Phe Gly Glu Ser Asp Thr Cys Cys
```

100

105

110

Ser Gly His Cys His Tyr Asp Glu Asp Leu Asn Gln Glu Glu Gln Glu  
 115 120 125

Glu Gly Asn Met His His Ser Cys Glu Cys Ser Asn His His  
 130 135 140

<210> 67  
 <211> 471  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 67  
 atggaaaaac aaaattttaa attagatgtc aaagagattg agtttcctga aacggtattc 60  
 agccgtgata tcgaaactcg tgttatccaa gtaattatTT tgcattgttt agcaaaaatt 120  
 aacggtgttt ccttcctcgg aggaaatcta atagacgctc tgttcggtag agatatcgaa 180  
 agaatgaagg ggatctatgt agaacaggat tcaaaaaatc atctgggtcaa agttcgtgtc 240  
 gaagtgaacg tagattacgg tgtttctata ccagagaaaa cagaagaaat ccagggatgc 300  
 attgttttcag aaatttcaga atatacagga cttcatgtgg ccgctgtcca cgtgatcatt 360  
 aaaggggttg cacaaccaa agatcgtatt gatgaagaaa ttgaagagga agtctctgtt 420  
 caagatcttc cttcacctga agacttctta cttgagaatt ctgaagggtg g 471

<210> 68  
 <211> 156  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 68

Met Glu Lys Gln Asn Leu Lys Leu Asp Val Lys Glu Ile Glu Phe Pro  
 1 5 10 15

Glu Thr Val Phe Ser Arg Asp Ile Glu Thr Arg Val Ile Gln Val Ile  
 20 25 30

Ile Leu His Cys Leu Ala Lys Ile Asn Gly Val Ser Leu Leu Gly Gly  
 35 40 45

Asn Leu Ile Asp Ala Leu Phe Gly Arg Asp Ile Glu Arg Met Lys Gly  
 50 55 60

Ile Tyr Val Glu Gln Asp Ser Lys Asn His Leu Val Lys Val Arg Val  
 65 70 75 80

Glu Val Asn Val Asp Tyr Gly Val Ser Ile Pro Glu Lys Thr Glu Glu  
 85 90 95

Ile Gln Gly Cys Ile Val Ser Glu Ile Ser Glu Tyr Thr Gly Leu His  
 100 105 110

Val Ala Ala Val His Val Ile Ile Lys Gly Leu Thr Gln Pro Lys Asp  
 115 120 125

Arg Ile Asp Glu Glu Ile Glu Glu Glu Val Ser Val Gln Asp Leu Pro  
 130 135 140

Ser Pro Glu Asp Phe Leu Leu Glu Asn Ser Glu Gly  
 145 150 155

<210> 69  
 <211> 231  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 69  
 gtgaaaaata aaattgttac attattagat cagctctacg aggatcagga gtcacgactt 60  
 cagaagtttag gagaggaaat tgttcctaac ctcaactcctg aagatttatt gcaacctatg 120  
 gattttcctc aattggaagg gaatccggca tttcgttttg aagaggggtgt cttatcagga 180  
 attggtgagg tgcgagctgc gatttttagcg gcgctctctc aagagaacta g 231

<210> 70  
 <211> 76  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 70

Val Lys Asn Lys Ile Val Thr Leu Leu Asp Gln Leu Tyr Glu Asp Gln  
 1 5 10 15

Glu Ser Arg Leu Gln Lys Leu Gly Glu Glu Ile Val Pro Asn Leu Thr  
 20 25 30

Pro Glu Asp Leu Leu Gln Pro Met Asp Phe Pro Gln Leu Glu Gly Asn  
 35 40 45

Pro Ala Phe Arg Phe Glu Glu Gly Val Leu Ser Gly Ile Gly Glu Val  
 50 55 60

Arg Ala Ala Ile Leu Ala Ala Leu Ser Gln Glu Asn  
 65 70 75

<210> 71  
 <211> 522  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 71  
 atgtggatca tagaccctct atcagcaaaa aaacctctac aagcagccat aaatgttcct 60  
 ggcaactccaa ttacaggagg acctaataca gcaactgctg acgatatcat tgcaaaattc 120  
 tccaaagact caaaccctct gattgttact gtttactacg tctatcaatc cgtattagtt 180  
 gctcaagata acctctccat cattgcccga gaactccaag caaactcttc agctcaaacc 240  
 tacctaaata accaagaagc cttataccaa tacgtcagta ttcctaaaaa taaactgaac 300  
 gataactcct ctagctatct acaaaacatc caatccgata accaagcgat aggagcttct 360  
 cggcaagcta tccaaaacca aatttccagt ttaggaaacg cggctcaggt aatctccagt 420  
 aacttgaaca caaataataa catcatccaa caatccttac aggtaggaca ggctcttatt 480  
 cagaccttct ctcaaattgt aagcctaatt gctaacatct aa 522

<210> 72  
 <211> 173  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 72

Met Trp Ile Ile Asp Pro Leu Ser Ala Lys Lys Pro Leu Gln Ala Ala  
 1 5 10 15

Ile Asn Val Pro Gly Thr Pro Ile Thr Gly Gly Pro Asn Thr Ala Thr  
20 25 30

Ala Asp Asp Ile Ile Ala Lys Phe Ser Lys Asp Ser Asn Pro Leu Ile  
35 40 45

Val Thr Val Tyr Tyr Val Tyr Gln Ser Val Leu Val Ala Gln Asp Asn  
50 55 60

Leu Ser Ile Ile Ala Gln Glu Leu Gln Ala Asn Ser Ser Ala Gln Thr  
65 70 75 80

Tyr Leu Asn Asn Gln Glu Ala Leu Tyr Gln Tyr Val Ser Ile Pro Lys  
85 90 95

Asn Lys Leu Asn Asp Asn Ser Ser Ser Tyr Leu Gln Asn Ile Gln Ser  
100 105 110

Asp Asn Gln Ala Ile Gly Ala Ser Arg Gln Ala Ile Gln Asn Gln Ile  
115 120 125

Ser Ser Leu Gly Asn Ala Ala Gln Val Ile Ser Ser Asn Leu Asn Thr  
130 135 140

Asn Asn Asn Ile Ile Gln Gln Ser Leu Gln Val Gly Gln Ala Leu Ile  
145 150 155 160

Gln Thr Phe Ser Gln Ile Val Ser Leu Ile Ala Asn Ile  
165 170

<210> 73

<211> 222

<212> DNA

<213> Chlamydia pneumoniae

<400> 73

ttgtggtata aatctttagc tggagaggag aaggacgtgt ctgggaatga gtgcaatgac 60

tatccagaag tttttaaaga tgacgtaagt gcttacgtat tggtaacttg tggtcagatg 120

tcttctgaag gcaaaatcca ggtggagatg acttatgaag gagatccagc tgtgatcagc 180

tattttattaa caaaagcacg agactcttta gatgagtctt aa

222

<210> 74  
<211> 73  
<212> PRT  
<213> Chlamydia pneumoniae

<400> 74

Leu Trp Tyr Lys Ser Leu Ala Gly Glu Glu Lys Asp Val Ser Gly Asn  
1 5 10 15

Glu Cys Asn Asp Tyr Pro Glu Val Phe Lys Asp Asp Val Ser Ala Tyr  
20 25 30

Val Leu Val Thr Cys Gly Gln Met Ser Ser Glu Gly Lys Ile Gln Val  
35 40 45

Glu Met Thr Tyr Glu Gly Asp Pro Ala Val Ile Ser Tyr Leu Leu Thr  
50 55 60

Lys Ala Arg Asp Ser Leu Asp Glu Ser  
65 70

<210> 75  
<211> 1494  
<212> DNA  
<213> Chlamydia pneumoniae

<400> 75

|   |     |
|---|-----|
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| gtagatggaa atgccactga agaagctggt gttgctgcag aagtacaagt agctctccct | 120 |
| gcaggagagc aatatgcat gctgagagca acttccgagc tatgttttgg gattttaaca  | 180 |
| caatcggaat gtgctttgac acaagcactg cctcccaagg aaaaaccatt acaagaagag | 240 |
| caatttctag taaaaaatgg catattaatg cgatcaacat ctctgccgaa cctaaaacca | 300 |
| ggacaatcgc agcagactag cttagcttca catagaaatc ccttagcgca gcaatccaca | 360 |
| tcttcgaatt ccacagggaa agcatcaaca gaaacaacct cgtcttcctt tccgtttttc | 420 |
| tcatgcaaag ctctgaagg agactccagt gtggacaaaa cgttcacagt gtctgtccaa  | 480 |

acaccaaaag cacaagagca acaagaagca agcgcttctc aaagccaagc acaatttcat 540  
 gtaaggctct attctagcag caccataaaa gaacatagtg ctaaagaaaa agtctcacaa 600  
 agcaccaagt cggcagagac acaaaaacac acacaaacta agtctgatgc gactcttagt 660  
 ccgatgtcac tctatagcac cttacataag gaagtacctc aagcactatc ctctacaaaa 720  
 agccaacaaa aagatgaaga acatcgagat caaaggcaac aagaaggata cgagcaagaa 780  
 caagagcaag aagaaggcaa gaaaaagaca ccatgggtgca ctgtggaatc tctacaacag 840  
 acttcaagtt cgaaccaggt gtacgagtct tatactccta ttattcctga tcctattgtg 900  
 gagtttgctt tgtctgaatc acagctaagc gtgcttgca gaaagcgtgt gaccaacctt 960  
 gatgtcctta gaatatgtac agagctaata aagttgatgc tcaaaagtag agctaacgac 1020  
 acaatgacac gtcttgaaga aagagagctc atggaaaggg aagctcatga attggcggcg 1080  
 agttattcac gtcaagctaa atacgcccgc tggctaggga tcgcgacagc aacgttaggt 1140  
 attttaggag cgattgctcc tatggttgga gaaatttccg gagatagcat tttagggttt 1200  
 gtccaaagga tttctggaag attcaaagat gcgactgcga aaaccttctt taaaggaata 1260  
 ggaaaagttt tcacctctct atcacaactt actgaagccg cttctaaagt acatgagtta 1320  
 tcagagagtg ctgtacgagc tgttgctgag tacagaaaag aagtcttcag aatgagacag 1380  
 gatgaagtca cacgtaccat tgaggaagtc aaagacaact ggaaaagtat ggacaatttc 1440  
 cttctgaaca ttctccaaac agaacatgac gctgctcgca gtctgtatca gtag 1494

<210> 76  
 <211> 497  
 <212> PRT  
 <213> *Chlamydia pneumoniae*

<400> 76

Met Thr Val Ser Tyr Gln Ser Ile Ser Thr Pro Pro Pro Glu Gly Glu  
 1 5 10 15

Phe Asp Ile Phe Val Asp Gly Asn Ala Thr Glu Glu Ala Val Val Ala  
 20 25 30

Ala Glu Val Gln Val Ala Leu Pro Ala Gly Glu Gln Tyr Ala Met Leu  
 35 40 45

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Ala | Thr | Ser | Glu | Leu | Cys | Phe | Gly | Ile | Leu | Thr | Gln | Ser | Glu | Cys |
| 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ala | Leu | Thr | Gln | Ala | Leu | Pro | Pro | Lys | Glu | Lys | Pro | Leu | Gln | Glu | Glu |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Gln | Phe | Leu | Val | Lys | Asn | Gly | Ile | Leu | Met | Arg | Ser | Thr | Ser | Leu | Pro |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asn | Leu | Lys | Pro | Gly | Gln | Ser | Gln | Gln | Thr | Ser | Leu | Ala | Ser | His | Arg |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Pro | Leu | Ala | Gln | Gln | Ser | Thr | Ser | Ser | Asn | Ser | Thr | Gly | Lys | Ala |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Ser | Thr | Glu | Thr | Thr | Ser | Ser | Ser | Phe | Pro | Phe | Phe | Ser | Cys | Lys | Ala |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Pro | Glu | Gly | Asp | Ser | Ser | Val | Asp | Lys | Thr | Phe | Thr | Val | Ser | Val | Gln |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Thr | Pro | Lys | Ala | Gln | Glu | Gln | Gln | Glu | Ala | Ser | Ala | Ser | Gln | Ser | Gln |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ala | Gln | Phe | His | Val | Arg | Ser | Tyr | Ser | Ser | Ser | Thr | Ile | Lys | Glu | His |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Ser | Ala | Lys | Glu | Lys | Val | Ser | Gln | Ser | Thr | Lys | Ser | Ala | Glu | Thr | Gln |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Lys | His | Thr | Gln | Thr | Lys | Ser | Asp | Ala | Thr | Leu | Ser | Pro | Met | Ser | Leu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Tyr | Ser | Thr | Leu | His | Lys | Glu | Val | Pro | Gln | Ala | Leu | Ser | Ser | Thr | Lys |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Ser | Gln | Gln | Lys | Asp | Glu | Glu | His | Arg | Asp | Gln | Arg | Gln | Gln | Glu | Gly |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Glu | Gln | Glu | Gln | Glu | Gln | Glu | Glu | Gly | Lys | Lys | Lys | Thr | Pro | Trp |
|     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Cys | Thr | Val | Glu | Ser | Leu | Gln | Gln | Thr | Ser | Ser | Ser | Asn | Gln | Val | Tyr |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Glu | Ser | Tyr | Thr | Pro | Ile | Ile | Pro | Asp | Pro | Ile | Val | Glu | Phe | Ala | Leu |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Ser | Glu | Ser | Gln | Leu | Ser | Val | Leu | Ala | Gly | Lys | Arg | Val | Thr | Asn | Leu |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asp | Val | Leu | Arg | Ile | Cys | Thr | Glu | Leu | Met | Lys | Leu | Met | Leu | Lys | Ser |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Arg | Ala | Asn | Asp | Thr | Met | Thr | Arg | Leu | Glu | Glu | Arg | Glu | Leu | Met | Glu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Arg | Glu | Ala | His | Glu | Leu | Ala | Ala | Ser | Tyr | Ser | Arg | Gln | Ala | Lys | Tyr |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ala | Arg | Trp | Leu | Gly | Ile | Ala | Thr | Ala | Thr | Leu | Gly | Ile | Leu | Gly | Ala |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Ile | Ala | Pro | Met | Val | Gly | Glu | Ile | Ser | Gly | Asp | Ser | Ile | Leu | Gly | Phe |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Val | Gln | Arg | Ile | Ser | Gly | Arg | Phe | Lys | Asp | Ala | Thr | Ala | Lys | Thr | Phe |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Phe | Lys | Gly | Ile | Gly | Lys | Val | Phe | Thr | Ser | Leu | Ser | Gln | Leu | Thr | Glu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Ala | Ala | Ser | Lys | Val | His | Glu | Leu | Ser | Glu | Ser | Ala | Val | Arg | Ala | Val |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Ala | Glu | Tyr | Arg | Lys | Glu | Val | Phe | Arg | Met | Arg | Gln | Asp | Glu | Val | Thr |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |

Arg Thr Ile Glu Glu Val Lys Asp Asn Trp Lys Ser Met Asp Asn Phe  
 465 470 475 480

Leu Leu Asn Ile Leu Gln Thr Glu His Asp Ala Ala Arg Ser Leu Tyr  
 485 490 495

Gln

<210> 77  
 <211> 1533  
 <212> DNA  
 <213> *Chlamydia pneumoniae*

<400> 77  
 atgtcctctt ggttatctca agcaagtgag gttctttctca atcaagatcc ttatatccct 60  
 gatgctccta ggtcacaaga atcttcgggt cctaagatta gctattctat cactgtagcg 120  
 cctcaagaag ctcaaaagtc tcttcccaag tttttcactc agaaatttca gtcacaatgt 180  
 aagtctgagc ctccatcac ccatcataaa acattcatta ttgcaacacc aagagagaga 240  
 atcttgcggt tcggcagctc tttcgaatct caacttcaca acacatcgca agctcaaact 300  
 tcatctcctt ggaatctttt ttctcaaaaa aatagcacag aagcaagtaa agctctgatg 360  
 caagaactga ctatgccaaa atctccggag aaaacttcag agaaggctct agataaaaac 420  
 ctgagttcta aacaagaagg ctcttgcaaa aattttgata cgctgcacct acaacaacat 480  
 ctcaagttgt ttggaaccgt tgactcgcta tattctcaaa gcctagatag tgaacagcaa 540  
 gaactcctcc aatcacgaag agaagagcgc agtgaaacct atgcaaacca gcagagttct 600  
 gagaaaaaaaa tagaaaccaa agttcagata aaagatctct gtaaagacct cttttctcag 660  
 gatcaggatt ccaatcaaaa acaaaagaaa tcccctttcc aacaagatac atcacgtaaa 720  
 aatagaatag ccaaagcagc acaagctggt cctgtaattc ctctccaag cataggagtg 780  
 ttacattga gctatctact cacaaaacaa gggattcttt cagacttttc ttcgtatgga 840  
 tgccacaaag attccgtgga gtcgacacaa cgagagctcg atgctctaca tgaaaagaga 900  
 atcgagacta tcaaggctcag catcgagaaa gaaaaacgag aaagattatg gggatctctt 960  
 tctgacatta tcggttggct agctccgttt gtttctatag ggatcggcat tgttgctatc 1020

ttgagtggag gcggtatctt tgcttttgca ggtttttttg cagggctaata ttctcttggt 1080  
 atcaagtgtt tagagaaact aaagttcttg gattggctag aaaaacatct gcctataaaa 1140  
 aatgaagaac taagacgaaa aattataacc ataatccagt gggtcgtcta tttaaccctt 1200  
 gtcattctct ccatatgcac attaaaagta gaaaatttag gtttttcccc tattatagaa 1260  
 ggagctatta aaggaatcca acccgcgata gaatctacga tggctgcttt aagatgcgct 1320  
 atactgtttt ctcaagcaga aatctataaa ctcaaaggaa aactcactaa aatccaactc 1380  
 gacattgaat tgaaaagttt tgatagggac gatcattacg aacgttctca agaactttta 1440  
 gataacatgg agagttcttt cgaagccctt tcaagaatct taaattacat gcgtgaacta 1500  
 gatcaagtgt atctccactc cttaagagga taa 1533

<210> 78  
 <211> 510  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 78

Met Ser Ser Trp Leu Ser Gln Ala Ser Glu Val Leu Leu Asn Gln Asp  
 1 5 10 15

Pro Tyr Ile Pro Asp Ala Pro Arg Ser Gln Glu Ser Ser Val Pro Lys  
 20 25 30

Ile Ser Tyr Ser Ile Thr Val Ala Pro Gln Glu Ala Gln Lys Ser Leu  
 35 40 45

Pro Lys Phe Phe Thr Gln Lys Phe Gln Ser Gln Cys Lys Ser Glu Pro  
 50 55 60

Pro Ile Thr His His Lys Thr Phe Ile Ile Ala Thr Pro Arg Glu Arg  
 65 70 75 80

Ile Leu Arg Phe Gly Ser Ser Phe Glu Ser Gln Leu His Asn Thr Ser  
 85 90 95

Gln Ala Gln Thr Ser Ser Pro Trp Asn Leu Phe Ser Gln Lys Asn Ser  
 100 105 110

-84-

Ser Asp Ile Ile Gly Trp Leu Ala Pro Phe Val Ser Ile Gly Ile Gly  
325 330 335

Ile Val Ala Ile Leu Ser Gly Gly Gly Ile Phe Ala Phe Ala Gly Phe  
340 345 350

Phe Ala Gly Leu Ile Ser Leu Val Ile Lys Cys Leu Glu Lys Leu Lys  
355 360 365

Phe Trp Asp Trp Leu Glu Lys His Leu Pro Ile Lys Asn Glu Glu Leu  
370 375 380

Arg Arg Lys Ile Ile Thr Ile Ile Gln Trp Val Val Tyr Leu Thr Pro  
385 390 395 400

Val Ile Leu Ser Ile Cys Thr Leu Lys Val Glu Asn Leu Gly Phe Ser  
405 410 415

Pro Ile Ile Glu Gly Ala Ile Lys Gly Ile Gln Pro Ala Ile Glu Ser  
420 425 430

Thr Met Ala Ala Leu Arg Cys Ala Ile Leu Phe Ser Gln Ala Glu Ile  
435 440 445

Tyr Lys Leu Lys Gly Lys Leu Thr Lys Ile Gln Leu Asp Ile Glu Leu  
450 455 460

Lys Ser Phe Asp Arg Asp Asp His Tyr Glu Arg Ser Gln Glu Leu Leu  
465 470 475 480

Asp Asn Met Glu Ser Ser Phe Glu Ala Leu Ser Arg Ile Leu Asn Tyr  
485 490 495

Met Arg Glu Leu Asp Gln Val Tyr Leu His Ser Leu Arg Gly  
500 505 510

<210> 79

<211> 588

<212> DNA

<213> Chlamydia pneumoniae

<400> 79  
atggcttacg gaactcggtta tcccacgcta gcattccata cagggggcat tgggtgaatct 60  
gatgacggta tgccccacaca acccttttgaa acttttctgct acgattctgc tcttctacaa 120  
gcaaaaatcg aaaatttttaa tatcgtcctt tatacatctg tacttcctaa agagctcttt 180  
gggaatatcg ttctgtaga tacctgtgta aaatctttca aacacggcgc tgtccttgaa 240  
gtaatcatgg cgggtcgtgg tgctgctctc tctgacggaa cccatgcat cgccaccgga 300  
atcggcattt gctggggtaa agataaaaat ggagagctta ttggcggatg ggcagcagaa 360  
tatgttgaat tcttccctac atggataaat gacgaaattg cagaaacca tgctaaaatg 420  
tggttgaaaa aatccctaca acacgaactt gacctacgct ctatagcaaa gcatagcgaa 480  
ttccaattct tccataatta catcaacatc aaacaaaaat tcggtttttg cttaactgca 540  
ttaggattcc taaatttcga aaatgctgaa ccagctaagg taaattaa 588

<210> 80  
<211> 195  
<212> PRT  
<213> *Chlamydia pneumoniae*

<400> 80

Met Ala Tyr Gly Thr Arg Tyr Pro Thr Leu Ala Phe His Thr Gly Gly  
1 5 10 15

Ile Gly Glu Ser Asp Asp Gly Met Pro Pro Gln Pro Phe Glu Thr Phe  
20 25 30

Cys Tyr Asp Ser Ala Leu Leu Gln Ala Lys Ile Glu Asn Phe Asn Ile  
35 40 45

Val Pro Tyr Thr Ser Val Leu Pro Lys Glu Leu Phe Gly Asn Ile Val  
50 55 60

Pro Val Asp Thr Cys Val Lys Ser Phe Lys His Gly Ala Val Leu Glu  
65 70 75 80

Val Ile Met Ala Gly Arg Gly Ala Ala Leu Ser Asp Gly Thr His Ala  
85 90 95

Ile Ala Thr Gly Ile Gly Ile Cys Trp Gly Lys Asp Lys Asn Gly Glu  
 100 105 110

Leu Ile Gly Gly Trp Ala Ala Glu Tyr Val Glu Phe Phe Pro Thr Trp  
 115 120 125

Ile Asn Asp Glu Ile Ala Glu Thr His Ala Lys Met Trp Leu Lys Lys  
 130 135 140

Ser Leu Gln His Glu Leu Asp Leu Arg Ser Ile Ala Lys His Ser Glu  
 145 150 155 160

Phe Gln Phe Phe His Asn Tyr Ile Asn Ile Lys Gln Lys Phe Gly Phe  
 165 170 175

Cys Leu Thr Ala Leu Gly Phe Leu Asn Phe Glu Asn Ala Glu Pro Ala  
 180 185 190

Lys Val Asn  
 195

<210> 81  
 <211> 1092  
 <212> DNA  
 <213> Chlamydia pneumoniae

<400> 81  
 atgaaattat atcagacctt gcgaggtatt gttttagtaa gtacgggatg catattctta 60  
 ggaatgcacg gaggatatgc cgctgaggtt ccagtgactt catctgggta tgagaatctt 120  
 ttagaatcta aggaacagga tccttcaggt ctagcgatcc acgatcgcat tttgtttaag 180  
 gtagatgaag agaatgtagt gactgcctta gatgtgatcc ataaattaaa cttactatct 240  
 tataattcgt atcctcatct tatagattct ttccctgcac gatcccagta ctatactgcg 300  
 atgtggcctg tggttcttga atctgtgatt gatgagtttt tgatggtggc agatgccaag 360  
 gcaaagagaa tcgctacaga tcccaccgca gtgaatcaag aaatcgaaga gatgttcgga 420  
 agagatctct ctcccttgta tgcgcatctt gaaatgagtc ccaacgatat ttttaatgtg 480  
 atcgatcgca ctttgacagc acaaaggggtg atgggtatga tgggtgcgctc taaggtaatg 540

ttgaaggtga ctccagggaa aattcgagaa tattaccgaa agctagaaga agaagcctct 600  
 aggaaagtca tctggaagta tcgtgtgttg acgattaaag ccaacacaga atccttggtc 660  
 agccagattg ctgataaagt gcgtgctcgt ctaaatagaag cgaaaacctg ggataaagat 720  
 cgtttaactg ctcttgtgat ctctcaggga gggcaactcg tctgctccga agagttttct 780  
 cgagagaata gtgagctctc ccaaagccat aagcaagagc tggacttgat tggctatcct 840  
 aaagagctct gtgggttgcc taaggcacat aagtcaggat ataaactcta tatgttggtta 900  
 gacaaaacct caggttctat agagccttta gatgttatgg agtccaagat caaacagcat 960  
 ctttttgctt tagaagctga gagtgtagag aaacaatata aagacagatt acgcaagcgc 1020  
 tacggctatg atgcttctat gattgcgaaa cttctttctg aagaagctcc acctctattt 1080  
 tccttattat ag 1092

<210> 82  
 <211> 363  
 <212> PRT  
 <213> *Chlamydia pneumoniae*

<400> 82

Met Lys Leu Tyr Gln Thr Leu Arg Gly Ile Val Leu Val Ser Thr Gly  
 1 5 10 15

Cys Ile Phe Leu Gly Met His Gly Gly Tyr Ala Ala Glu Val Pro Val  
 20 25 30

Thr Ser Ser Gly Tyr Glu Asn Leu Leu Glu Ser Lys Glu Gln Asp Pro  
 35 40 45

Ser Gly Leu Ala Ile His Asp Arg Ile Leu Phe Lys Val Asp Glu Glu  
 50 55 60

Asn Val Val Thr Ala Leu Asp Val Ile His Lys Leu Asn Leu Leu Phe  
 65 70 75 80

Tyr Asn Ser Tyr Pro His Leu Ile Asp Ser Phe Pro Ala Arg Ser Gln  
 85 90 95

Tyr Tyr Thr Ala Met Trp Pro Val Val Leu Glu Ser Val Ile Asp Glu  
 100 105 110

Phe Leu Met Val Ala Asp Ala Lys Ala Lys Arg Ile Ala Thr Asp Pro  
 115 120 125

Thr Ala Val Asn Gln Glu Ile Glu Glu Met Phe Gly Arg Asp Leu Ser  
 130 135 140

Pro Leu Tyr Ala His Phe Glu Met Ser Pro Asn Asp Ile Phe Asn Val  
 145 150 155 160

Ile Asp Arg Thr Leu Thr Ala Gln Arg Val Met Gly Met Met Val Arg  
 165 170 175

Ser Lys Val Met Leu Lys Val Thr Pro Gly Lys Ile Arg Glu Tyr Tyr  
 180 185 190

Arg Lys Leu Glu Glu Glu Ala Ser Arg Lys Val Ile Trp Lys Tyr Arg  
 195 200 205

Val Leu Thr Ile Lys Ala Asn Thr Glu Ser Leu Ala Ser Gln Ile Ala  
 210 215 220

Asp Lys Val Arg Ala Arg Leu Asn Glu Ala Lys Thr Trp Asp Lys Asp  
 225 230 235 240

Arg Leu Thr Ala Leu Val Ile Ser Gln Gly Gly Gln Leu Val Cys Ser  
 245 250 255

Glu Glu Phe Ser Arg Glu Asn Ser Glu Leu Ser Gln Ser His Lys Gln  
 260 265 270

Glu Leu Asp Leu Ile Gly Tyr Pro Lys Glu Leu Cys Gly Leu Pro Lys  
 275 280 285

Ala His Lys Ser Gly Tyr Lys Leu Tyr Met Leu Leu Asp Lys Thr Ser  
 290 295 300

Gly Ser Ile Glu Pro Leu Asp Val Met Glu Ser Lys Ile Lys Gln His  
 305 310 315 320

Leu Phe Ala Leu Glu Ala Glu Ser Val Glu Lys Gln Tyr Lys Asp Arg  
 325 330 335

Leu Arg Lys Arg Tyr Gly Tyr Asp Ala Ser Met Ile Ala Lys Leu Leu  
 340 345 350

Ser Glu Glu Ala Pro Pro Leu Phe Ser Leu Leu  
 355 360

<210> 83  
 <211> 2076  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 83  
 atgacgctct ttcatttctca tcatgatgcc gtctctccag acagctacct atgttcttcc 60  
 cttcagtttag ttggtactgg cgtatacgaa ggagaaatcg agattcaaaa tatcccctct 120  
 tatttccttg gattccaatt accctctcat tgcatacacc ttaattttaa gagctctcta 180  
 gctcaattag gaatagatgc ctcccttctt cactgcgaat tgagcaaaaa tcaacatcga 240  
 gcacatatat atgctcaatt taccgggtcat ggccccattg ctgaatctat gctagccctt 300  
 ctccaaccag gagatcgtgt agcaaaacta tttgctgcag acgatcgcag actgggtccga 360  
 tctccagatt acctcgaaag catgctgaaa aatacagata aagctggcca tcctttgctc 420  
 tgttttggga aaaaattaga acacttgatt tcttttgatg tggtagatga tcgccttgtc 480  
 gtctcccttc ctaccctgcc gggagttggt cgttatgatt cggatattta tggactcctt 540  
 cctcttattc aaaaatcact cagtaatccc aaactcagca ttcgtcactt tttagctctg 600  
 taccaacaga ttgtggaagg gcaacatgtc tcttgcgga accatattct tctgatcaaa 660  
 acagaaccgc tgcacatccg cactgtattt gctcgcgtgg taaatcaact cctccctcaa 720  
 ggtctctccc acacttctgc caatattttg gaaccaacca ctcgagaatc cgggggatatc 780  
 tttgaatttt ttgggaaccc ttctgcacag atagaaagaa ttcctttaga atttttcact 840  
 atogaaccct ataaagaaca ttcttacttc tgtaatcggg atttattaca aaccatctta 900

|  |      |
|--|------|
| caatcagaaa gcgaaatcaa aaaaatattc gaaacagcgc ccaaagaacc tgtcaaagct  | 960  |
| gccacctatt tatcaaaagg cagtgaaatc tcttccttgc acacagactc ttggctcaca  | 1020 |
| ggatccgcag ctgcctatca atatagtgag caagcagata aaaacgagta cactcatgct  | 1080 |
| caaccttgct atccttttctt agaagcaatg gaaatggggc tgatcaatag cgaaggagcc | 1140 |
| ttactcactc gttattttccc ttcagctagc ttaaaaggaa tgttgatttc ctaccatgtg | 1200 |
| cgccactatc tcaaacaaat ctactttcaa gttccctctt atacacatgg aaactatttc  | 1260 |
| tctcataatg acagagggtt gctattagat ctgcagcaag cagatattga tgttttctgg  | 1320 |
| gcagatgaag aaagcggccg tgtgttgcaa tatacaaaac gacgcgataa gaatagcggc  | 1380 |
| atgttcgtga tcaaaaatcg tgttgaagag tttcgatcag cttattttat tgctatttat  | 1440 |
| ggctctcgtc tccttgagaa taattttctct gctcagctcc ataccctcct agcgggctta | 1500 |
| cagcaagcag cacatactct cggcattcct ggattctcaa agcctacccc acttgcagtc  | 1560 |
| atcacccggag gcggcactgg agttatggcc acaggaaatc gtgtagctaa agaactagga | 1620 |
| atcctatctt gtggaaccgt tcttgattta gaagcttctc cagcacaaat cgaccaacct  | 1680 |
| accaatgaat tcttagatgc taaaatgaca taccgcctac ctcaacttat agaaaggcaa  | 1740 |
| gaacactttt atgcagacct tcctatcctt gtagttggcg gtgtaggaac cgatttcgaa  | 1800 |
| ctctacctag aacttgtcta tctcaaaaca ggagctaaac caccgactcc cattttccta  | 1860 |
| attggaccta ttgaatactg gaaagaaaaa gtggcccacg cctacgagat caacctcaaa  | 1920 |
| gcaggaacca tccgtggatc cgaatggatc agcaactgcc tatattgtat cacttctccg  | 1980 |
| gaagctggaa ttgccgtatt cgaacaattc ctagctggag aactccctat aggatacgac  | 2040 |
| tatcctccag ctccagatgg attagtgatc gtctaa                            | 2076 |

<210> 84

<211> 691

<212> PRT

<213> Chlamydia trachomatis

<400> 84

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Met | Thr | Leu | Phe | His | Ser | His | Asp | Ala | Val | Ser | Pro | Asp | Ser | Tyr. |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |      |

Leu Cys Ser Ser Leu Gln Leu Val Gly Thr Gly Val Tyr Glu Gly Glu  
 20 25 30  
 Ile Glu Ile Gln Asn Ile Pro Ser Tyr Phe Leu Gly Phe Gln Leu Pro  
 35 40 45  
 Ser His Cys Ile His Leu Asn Leu Lys Ser Ser Leu Ala Gln Leu Gly  
 50 55 60  
 Ile Asp Ala Ser Leu Leu His Cys Glu Leu Ser Lys Asn Gln His Arg  
 65 70 75 80  
 Ala His Ile His Ala Gln Phe Thr Gly His Gly Pro Ile Ala Glu Ser  
 85 90 95  
 Met Leu Ala Leu Leu Gln Pro Gly Asp Arg Val Ala Lys Leu Phe Ala  
 100 105 110  
 Ala Asp Asp Arg Arg Leu Val Arg Ser Pro Asp Tyr Leu Glu Ser Met  
 115 120 125  
 Leu Lys Asn Thr Asp Lys Ala Gly His Pro Leu Leu Cys Phe Gly Lys  
 130 135 140  
 Lys Leu Glu His Leu Ile Ser Phe Asp Val Val Asp Asp Arg Leu Val  
 145 150 155 160  
 Val Ser Leu Pro Thr Leu Pro Gly Val Val Arg Tyr Asp Ser Asp Ile  
 165 170 175  
 Tyr Gly Leu Leu Pro Leu Ile Gln Lys Ser Leu Ser Asn Pro Lys Leu  
 180 185 190  
 Ser Ile Arg His Phe Leu Ala Leu Tyr Gln Gln Ile Val Glu Gly Gln  
 195 200 205  
 His Val Ser Cys Gly Asn His Ile Leu Leu Ile Lys Thr Glu Pro Leu  
 210 215 220

|            |     |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|-----|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| His<br>225 | Ile | Arg        | Thr        | Val        | Phe<br>230 | Ala        | Arg        | Val        | Val        | Asn<br>235 | Gln        | Leu        | Leu        | Pro        | Gln<br>240 |
| Gly        | Leu | Ser        | His        | Thr<br>245 | Ser        | Ala        | Asn        | Ile        | Leu<br>250 | Glu        | Pro        | Thr        | Thr        | Arg<br>255 | Glu        |
| Ser        | Gly | Asp        | Ile<br>260 | Phe        | Glu        | Phe        | Phe        | Gly<br>265 | Asn        | Pro        | Ser        | Ala        | Gln<br>270 | Ile        | Glu        |
| Arg        | Ile | Pro<br>275 | Leu        | Glu        | Phe        | Phe        | Thr<br>280 | Ile        | Glu        | Pro        | Tyr        | Lys<br>285 | Glu        | His        | Ser        |
| Tyr<br>290 | Phe | Cys        | Asn        | Arg        | Asp        | Leu<br>295 | Leu        | Gln        | Thr        | Ile        | Leu<br>300 | Gln        | Ser        | Glu        | Ser        |
| Glu<br>305 | Ile | Lys        | Lys        | Ile        | Phe<br>310 | Glu        | Thr        | Ala        | Pro        | Lys<br>315 | Glu        | Pro        | Val        | Lys        | Ala<br>320 |
| Ala        | Thr | Tyr        | Leu        | Ser<br>325 | Lys        | Gly        | Ser        | Glu        | Ile<br>330 | Ser        | Ser        | Leu        | His        | Thr<br>335 | Asp        |
| Ser        | Trp | Leu        | Thr<br>340 | Gly        | Ser        | Ala        | Ala        | Ala<br>345 | Tyr        | Gln        | Tyr        | Ser        | Glu<br>350 | Gln        | Ala        |
| Asp        | Lys | Asn<br>355 | Glu        | Tyr        | Thr        | His        | Ala<br>360 | Gln        | Pro        | Cys        | Tyr        | Pro<br>365 | Phe        | Leu        | Glu        |
| Ala<br>370 | Met | Glu        | Met        | Gly        | Leu        | Ile<br>375 | Asn        | Ser        | Glu        | Gly        | Ala<br>380 | Leu        | Leu        | Thr        | Arg        |
| Tyr<br>385 | Phe | Pro        | Ser        | Ala        | Ser<br>390 | Leu        | Lys        | Gly        | Met        | Leu<br>395 | Ile        | Ser        | Tyr        | His        | Val<br>400 |
| Arg        | His | Tyr        | Leu        | Lys<br>405 | Gln        | Ile        | Tyr        | Phe        | Gln<br>410 | Val        | Pro        | Ser        | Tyr        | Thr<br>415 | His        |
| Gly        | Asn | Tyr        | Phe<br>420 | Ser        | His        | Asn        | Asp        | Arg<br>425 | Gly        | Leu        | Leu        | Leu        | Asp<br>430 | Leu        | Gln        |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ala | Asp | Ile | Asp | Val | Phe | Trp | Ala | Asp | Glu | Glu | Ser | Gly | Arg | Val |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Leu | Gln | Tyr | Thr | Lys | Arg | Arg | Asp | Lys | Asn | Ser | Gly | Met | Phe | Val | Ile |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Lys | Asn | Arg | Val | Glu | Glu | Phe | Arg | Ser | Ala | Tyr | Phe | Ile | Ala | Ile | Tyr |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Gly | Ser | Arg | Leu | Leu | Glu | Asn | Asn | Phe | Ser | Ala | Gln | Leu | His | Thr | Leu |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Leu | Ala | Gly | Leu | Gln | Gln | Ala | Ala | His | Thr | Leu | Gly | Ile | Pro | Gly | Phe |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Ser | Lys | Pro | Thr | Pro | Leu | Ala | Val | Ile | Thr | Gly | Gly | Gly | Thr | Gly | Val |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Met | Ala | Thr | Gly | Asn | Arg | Val | Ala | Lys | Glu | Leu | Gly | Ile | Leu | Ser | Cys |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Gly | Thr | Val | Leu | Asp | Leu | Glu | Ala | Ser | Pro | Ala | Gln | Ile | Asp | Gln | Pro |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Thr | Asn | Glu | Phe | Leu | Asp | Ala | Lys | Met | Thr | Tyr | Arg | Leu | Pro | Gln | Leu |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Ile | Glu | Arg | Gln | Glu | His | Phe | Tyr | Ala | Asp | Leu | Pro | Ile | Leu | Val | Val |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Gly | Gly | Val | Gly | Thr | Asp | Phe | Glu | Leu | Tyr | Leu | Glu | Leu | Val | Tyr | Leu |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Lys | Thr | Gly | Ala | Lys | Pro | Pro | Thr | Pro | Ile | Phe | Leu | Ile | Gly | Pro | Ile |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Glu | Tyr | Trp | Lys | Glu | Lys | Val | Ala | His | Ala | Tyr | Glu | Ile | Asn | Leu | Lys |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |

Ala Gly Thr Ile Arg Gly Ser Glu Trp Ile Ser Asn Cys Leu Tyr Cys  
645 650 655

Ile Thr Ser Pro Glu Ala Gly Ile Ala Val Phe Glu Gln Phe Leu Ala  
660 665 670

Gly Glu Leu Pro Ile Gly Tyr Asp Tyr Pro Pro Ala Pro Asp Gly Leu  
675 680 685

Val Ile Val  
690

<210> 85  
<211> 966  
<212> DNA  
<213> Chlamydia trachomatis

<400> 85  
atgaagcgtt tatttttttat ctgcgccctc gccctttctc ctctagcata tggagctggt 60  
caaaaggatc ctatgttaat gaaggagact ttccgtaata actacgggat cattgtctct 120  
aagcaagaat ggaacaaacg tggatgcatg ggctccatca ctagagtatt caaagatgga 180  
actacaacct tagaagttta tgcgcaagggt gctttacatg gggaagtcac acgaacgttt 240  
cctcactcta ctaccctggc cgttatagaa acttatgatc agggaaggct tctttctaag 300  
aagaccttct tcccaaattgc tttgcctgct aaagaagaag tttaccacga agatgggtct 360  
ttctccctaa cacgttggcc tgacaataac aactctgaca caatcacaga cccctgcttt 420  
gtagaaaaaa cttatggggg aagagtattg gaaggtcatt acacctcttt taatggaaaa 480  
tactcttcaa caatccttaa cggcgaggga gttcgctcta ctttttcttc ggatagtatc 540  
ttgttgacag aagagtcggt taatgatggc gtaatgggtca aaaaaacgac attttactcg 600  
actcgagaac ccgaaaccgt cactcattat gtcaatgggt accctcacgg agttcggttt 660  
acctatcttc ctggtgggat tccaaatacg attgaagaat ggcgatatgg acatcaagac 720  
ggccttaciaa tcttatttaa aaatgggtgt aagattgctg aagtccatt tgtacgcgga 780  
gcaaaaaatg gaatcgaact ccgatacaat gaacaagaga atatcgctga agagatttct 840  
tggcagcaca acatcttgca tggagtccgt aaaatccatg cggcggggggt atgcaaattc 900

gaatggtatt acaaaggcaa acctgtctcg caaatcaagt ttgaacgact cagcgctgcc 960  
agataa 966

<210> 86  
<211> 321  
<212> PRT  
<213> Chlamydia trachomatis

<400> 86

Met Lys Arg Leu Phe Phe Ile Cys Ala Leu Ala Leu Ser Pro Leu Ala  
1 5 10 15

Tyr Gly Ala Val Gln Lys Asp Pro Met Leu Met Lys Glu Thr Phe Arg  
20 25 30

Asn Asn Tyr Gly Ile Ile Val Ser Lys Gln Glu Trp Asn Lys Arg Gly  
35 40 45

Cys Asp Gly Ser Ile Thr Arg Val Phe Lys Asp Gly Thr Thr Thr Leu  
50 55 60

Glu Val Tyr Ala Gln Gly Ala Leu His Gly Glu Val Thr Arg Thr Phe  
65 70 75 80

Pro His Ser Thr Thr Leu Ala Val Ile Glu Thr Tyr Asp Gln Gly Arg  
85 90 95

Leu Leu Ser Lys Lys Thr Phe Phe Pro Asn Ala Leu Pro Ala Lys Glu  
100 105 110

Glu Val Tyr His Glu Asp Gly Ser Phe Ser Leu Thr Arg Trp Pro Asp  
115 120 125

Asn Asn Asn Ser Asp Thr Ile Thr Asp Pro Cys Phe Val Glu Lys Thr  
130 135 140

Tyr Gly Gly Arg Val Leu Glu Gly His Tyr Thr Ser Phe Asn Gly Lys  
145 150 155 160

Tyr Ser Ser Thr Ile Leu Asn Gly Glu Gly Val Arg Ser Thr Phe Ser  
165 170 175

Ser Asp Ser Ile Leu Leu Thr Glu Glu Ser Phe Asn Asp Gly Val Met  
180 185 190

Val Lys Lys Thr Thr Phe Tyr Ser Thr Arg Glu Pro Glu Thr Val Thr  
195 200 205

His Tyr Val Asn Gly Tyr Pro His Gly Val Arg Phe Thr Tyr Leu Pro  
210 215 220

Gly Gly Ile Pro Asn Thr Ile Glu Glu Trp Arg Tyr Gly His Gln Asp  
225 230 235 240

Gly Leu Thr Ile Leu Phe Lys Asn Gly Cys Lys Ile Ala Glu Val Pro  
245 250 255

Phe Val Arg Gly Ala Lys Asn Gly Ile Glu Leu Arg Tyr Asn Glu Gln  
260 265 270

Glu Asn Ile Ala Glu Glu Ile Ser Trp Gln His Asn Ile Leu His Gly  
275 280 285

Val Arg Lys Ile His Ala Ala Gly Val Cys Lys Ser Glu Trp Tyr Tyr  
290 295 300

Lys Gly Lys Pro Val Ser Gln Ile Lys Phe Glu Arg Leu Ser Ala Ala  
305 310 315 320

Arg

<210> 87  
<211> 426  
<212> DNA  
<213> Chlamydia trachomatis

<400> 87  
gtgagtttag attttttaga ggattttttc cgtcgctcaa ttaccaatca caacacagct

60

tttccagaag gcttttctgga tataatctgat gtcttagctc gttcggcttt agattttaag 120  
 gctgaggaac ttgctgacag tgctgttaat gacttcatcg tatcagaatc ttcagataaa 180  
 ctcactttat ttaacacaaa ttttgctgtg tggttggtac ctacattagt tgatggtgag 240  
 gcaattactc gcggctacat cgctttaaac cagggtgaag agttctctcc tgaattagct 300  
 tttgaagcat caggaaagta taataattcg agtttaatct tagaggcggt gcgaagatat 360  
 ttgtgtgata tccaggatac agaaaaagaa ttacgggcat tacgcccgcc ttcaatagat 420  
 ggatag 426

<210> 88  
 <211> 141  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 88

Val Ser Leu Asp Phe Leu Glu Asp Phe Phe Arg Arg Ser Ile Thr Asn  
 1 5 10 15

His Asn Thr Ala Phe Pro Glu Gly Phe Leu Asp Ile Ser Asp Val Leu  
 20 25 30

Ala Arg Ser Ala Leu Asp Phe Lys Ala Glu Glu Leu Ala Asp Ser Ala  
 35 40 45

Val Asn Asp Phe Ile Val Ser Glu Ser Ser Asp Lys Leu Thr Leu Phe  
 50 55 60

Asn Thr Asn Phe Ala Val Trp Leu Val Pro Thr Leu Val Asp Gly Glu  
 65 70 75 80

Ala Ile Thr Arg Gly Tyr Ile Ala Leu Asn Gln Gly Glu Glu Phe Ser  
 85 90 95

Pro Glu Leu Ala Phe Glu Ala Ser Gly Lys Tyr Asn Asn Ser Ser Leu  
 100 105 110

Ile Leu Glu Ala Leu Arg Arg Tyr Leu Cys Asp Ile Gln Asp Thr Glu  
 115 120 125

Lys Glu Leu Arg Ala Leu Arg Pro Pro Ser Ile Asp Gly  
 130 135 140

<210> 89  
 <211> 240  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 89  
 ttggaagata gaatgatcga cgggattcag acgtgttctt ttagccctac gcatcgctta 60  
 actgcgaaat ccgcagtgag tatagagatg ccttttagcaa cacaaaatct tcaagaggga 120  
 gcttttgtca atgcaaagct cgaagcggat ttcgcgagag cagagcagat tcttacagag 180  
 atgcaagaaa tccgttctag tttagagagg tcttttagaga ctctctttcc ccgcgagtaa 240

<210> 90  
 <211> 79  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 90  
 Leu Glu Asp Arg Met Ile Asp Gly Ile Gln Thr Cys Ser Phe Ser Pro  
 1 5 10 15  
 Thr His Arg Leu Thr Ala Lys Ser Ala Val Ser Ile Glu Met Pro Leu  
 20 25 30  
 Ala Thr Gln Asn Leu Gln Glu Gly Ala Leu Val Asn Ala Lys Leu Glu  
 35 40 45  
 Ala Asp Phe Ala Arg Ala Glu Gln Ile Leu Thr Glu Met Gln Glu Ile  
 50 55 60  
 Arg Ser Ser Leu Glu Arg Ser Leu Glu Thr Leu Phe Pro Arg Glu  
 65 70 75

<210> 91  
 <211> 696  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 91  
atgatggagg tgtttatgaa ttttttagat cagtttagatt taattattca aaataagcat 60  
atgctagaac acacatttta tgtgaaatgg tcgaaggggg agcttactaa agagcaatta 120  
caggcgtatg ccaaagacta ttattttacat atcaaagcct ttcctaaata tttatctgcg 180  
attcatagtc gttgcgatga ttttagaggcg cgtaagttat tgttagataa cttgatggat 240  
gaagagaacg gttaccctaa tcatattgat ttgtggaagc agtttgtggt tgctctagga 300  
gttactccag aagagttaga ggctcatgag cctagtgaag cagcaaaaagc gaaagtagct 360  
actttcatgc ggtgggtgtac aggagattct ttagctgcag gagtggctgc tttgtattct 420  
tatgagagtc aaattccacg tatcgctaga gagaaaattc gtggattgac tgagtacttt 480  
ggattttcca atcctgaaga ctatgcatat ttcacagaac atgaagaagc ggatgtgcgg 540  
catgctagag aagaaaaagc gctcattgag atgcttctca aagatgacgc tgataaagtg 600  
ttagaggcat cgcaagaagt aacgcaatct ttgtatggct ttttagattc ttttttggat 660  
ccaggaactt gttgtagttg tcatcaatct tattaa 696

<210> 92  
<211> 231  
<212> PRT  
<213> Chlamydia trachomatis

<400> 92

Met Met Glu Val Phe Met Asn Phe Leu Asp Gln Leu Asp Leu Ile Ile  
1 5 10 15

Gln Asn Lys His Met Leu Glu His Thr Phe Tyr Val Lys Trp Ser Lys  
20 25 30

Gly Glu Leu Thr Lys Glu Gln Leu Gln Ala Tyr Ala Lys Asp Tyr Tyr  
35 40 45

Leu His Ile Lys Ala Phe Pro Lys Tyr Leu Ser Ala Ile His Ser Arg  
50 55 60

Cys Asp Asp Leu Glu Ala Arg Lys Leu Leu Leu Asp Asn Leu Met Asp  
65 70 75 80

Glu Glu Asn Gly Tyr Pro Asn His Ile Asp Leu Trp Lys Gln Phe Val  
85 90 95

Phe Ala Leu Gly Val Thr Pro Glu Glu Leu Glu Ala His Glu Pro Ser  
100 105 110

Glu Ala Ala Lys Ala Lys Val Ala Thr Phe Met Arg Trp Cys Thr Gly  
115 120 125

Asp Ser Leu Ala Ala Gly Val Ala Ala Leu Tyr Ser Tyr Glu Ser Gln  
130 135 140

Ile Pro Arg Ile Ala Arg Glu Lys Ile Arg Gly Leu Thr Glu Tyr Phe  
145 150 155 160

Gly Phe Ser Asn Pro Glu Asp Tyr Ala Tyr Phe Thr Glu His Glu Glu  
165 170 175

Ala Asp Val Arg His Ala Arg Glu Glu Lys Ala Leu Ile Glu Met Leu  
180 185 190

Leu Lys Asp Asp Ala Asp Lys Val Leu Glu Ala Ser Gln Glu Val Thr  
195 200 205

Gln Ser Leu Tyr Gly Phe Leu Asp Ser Phe Leu Asp Pro Gly Thr Cys  
210 215 220

Cys Ser Cys His Gln Ser Tyr  
225 230

<210> 93  
<211> 816  
<212> DNA  
<213> Chlamydia trachomatis

<400> 93  
ttgagagcag ccttgaatac acttgaattt ctttcttctc cccctcttc ggatccttac 60  
gatgatttat tacaattaaa caaagaagga ttccttgctg gccctgaaga agaaaaacaa 120  
gctttttttc ttcgggtaga aaggacatta gcagaagctc ctgtacatcc caccctttt 180

cccatagaat tacagaaact cttcgatgtg aacccttctt ttttagaggt tgtgtactct 240  
 aatgaaagtt tagatgcctg ggaagcagga tgtacatgga tcaccgataa cagagtatcg 300  
 attcaactac gcaaacgttt tcaaaaagct tctttctggt ttgggttttt ttccaaagaa 360  
 gaagtgctgt ctcacgaagc tgttcatgct gtgcgtatga aattttatga accgatcttt 420  
 gaagaggtct tggcatacag cacttctaaa cacttttgga gacgcttttt tgggtcccctg 480  
 ttccgatcag cagaagaaac gcatttcttt ctgtttttcg ttttatttgg agcggttttta 540  
 ttcccttggt ttcccttgat aggcctttct tgtattcttg ctccctaatat gttctttttt 600  
 tttcgcttat tccgaacaca aatcctattt cgtaaagcaa agaaaaaat tcgaaaactt 660  
 ttaggtatag aacctctctg ggtcttacta cgcttaacag atagagaaat tcgcctattt 720  
 gctacacagc ccttagctgt gatagaagac ttcgctagga aagaaaagct gaaaagtgtg 780  
 cgctggaggc aaatctatca aagttacttc acctaa 816

<210> 94  
 <211> 271  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 94

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| Leu | Arg | Ala | Ala | Leu | Asn | Thr | Leu | Glu | Phe | Leu | Ser | Ser | Pro | Pro | Ser | 1  | 5  | 10 | 15 |
| Ser | Asp | Pro | Tyr | Asp | Asp | Leu | Leu | Gln | Leu | Asn | Lys | Glu | Gly | Phe | Leu | 20 | 25 | 30 |    |
| Ala | Gly | Pro | Glu | Glu | Glu | Lys | Gln | Ala | Phe | Phe | Leu | Arg | Val | Glu | Arg | 35 | 40 | 45 |    |
| Thr | Leu | Ala | Glu | Ala | Pro | Val | His | Pro | Thr | Pro | Phe | Pro | Ile | Glu | Leu | 50 | 55 | 60 |    |
| Gln | Lys | Leu | Phe | Asp | Val | Asn | Pro | Ser | Phe | Leu | Glu | Val | Val | Tyr | Ser | 65 | 70 | 75 | 80 |
| Asn | Glu | Ser | Leu | Asp | Ala | Trp | Glu | Ala | Gly | Cys | Thr | Trp | Ile | Thr | Asp | 85 | 90 | 95 |    |

Asn Arg Val Ser Ile Gln Leu Arg Lys Arg Phe Gln Lys Ala Ser Phe  
100 105 110

Trp Phe Gly Phe Phe Ser Lys Glu Glu Val Leu Ser His Glu Ala Val  
115 120 125

His Ala Val Arg Met Lys Phe Tyr Glu Pro Ile Phe Glu Glu Val Leu  
130 135 140

Ala Tyr Ser Thr Ser Lys His Phe Trp Arg Arg Phe Phe Gly Pro Leu  
145 150 155 160

Phe Arg Ser Ala Glu Glu Thr His Phe Phe Leu Phe Phe Val Leu Phe  
165 170 175

Gly Ala Phe Leu Phe Pro Trp Phe Pro Trp Ile Gly Leu Ser Cys Ile  
180 185 190

Leu Ala Pro Asn Met Phe Phe Phe Phe Arg Leu Phe Arg Thr Gln Ile  
195 200 205

Leu Phe Arg Lys Ala Lys Lys Lys Ile Arg Lys Leu Leu Gly Ile Glu  
210 215 220

Pro Leu Trp Val Leu Leu Arg Leu Thr Asp Arg Glu Ile Arg Leu Phe  
225 230 235 240

Ala Thr Gln Pro Leu Ala Val Ile Glu Asp Phe Ala Arg Lys Glu Lys  
245 250 255

Leu Lys Ser Val Arg Trp Arg Gln Ile Tyr Gln Ser Tyr Phe Thr  
260 265 270

<210> 95  
<211> 180  
<212> DNA  
<213> Chlamydia trachomatis

<400> 95  
atggaccagt tatcacagat acatcaagag ctagctcggt tagaatttat caatgatcaa

ctgcagtcgg aaagagcgta catccatgat ttattgtgtg cgataggctt tcctgaaggg 120  
 ttaaagacga tagccgcgat agctaacgaa gtgctttccg aagaagattc ccaagggttaa 180

<210> 96  
 <211> 59  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 96

Met Asp Gln Leu Ser Gln Ile His Gln Glu Leu Ala Arg Leu Glu Phe  
 1 5 10 15

Ile Asn Asp Gln Leu Gln Ser Glu Arg Ala Tyr Ile His Asp Leu Leu  
 20 25 30

Cys Ala Ile Gly Phe Pro Glu Gly Leu Lys Thr Ile Ala Ala Ile Ala  
 35 40 45

Asn Glu Val Leu Ser Glu Glu Asp Ser Gln Gly  
 50 55

<210> 97  
 <211> 2490  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 97

atgggtatac gcttagttat tgataaaggg cccttgtctg gaactgttct tatttttagaa 60  
 aatgggacga gttggtctct tggcagtgat ggaaaagcta gtgatattct cctgcaagat 120  
 gaaaagcttg ctccctctca gattcgcac actttaaaag atggcgagta ttatttagaa 180  
 aatttagatg ctttgaggcc ggtttctgtt gatggaacag ttatcactgc ccctgttttg 240  
 ttaaaagatg gggtttcctt tgtaatggga agctgccaaag tctcgttttt taaaggggaa 300  
 gaggtagaag gagatataga gttatcgttc cagacagaag gtggtaatga gggagagcct 360  
 gcagcgcaag gctcttcaag cgtttcgtcc gaagctccta aaaaggagac agggaatcca 420  
 agtcttcctt cggaggcaaa ggcttctgga gaagtatcta gttcagcaat agcgaaagaa 480  
 caagagttag cggcgtcctt tttagcttct gttgagaagg agcctggaac accaaaagaa 540

|             |            |            |            |             |            |      |
|-------------|------------|------------|------------|-------------|------------|------|
| gtctctgagc  | caaaggtctc | ttcacaagaa | ggacagactc | cttctggttac | aggagaaaaa | 600  |
| aaggatcttg  | agcttccttt | ggcaagtcaa | gaacaaccta | aacaaactac  | tccatcaggc | 660  |
| agtggatgaac | caacccaatc | tcaaaacgcg | agtatggaag | aaaacagaac  | gtcgcccgat | 720  |
| caaaatcagc  | agccacagct | ttcttctgct | tcagaatcgg | gttctcaaag  | tcccgaaaat | 780  |
| caggagcaac  | aaccttctca | aacgcctccc | ccatccccgg | aaactccaga  | gccgtcagga | 840  |
| gaacctaata  | gcgctacgga | agaaaactcg | ccatctccaa | tggagaaagc  | ttccgtaaca | 900  |
| gaagaaggca  | gctcagggac | gagtgaagaa | gaaaaagagg | gtgaagaaga  | tactgctgaa | 960  |
| agcgcagcaa  | atgaagagcc | aaaggcagag | gcttctcaag | aagaagagaa  | gaaagaggaa | 1020 |
| gataaaggag  | aggttcttgc | tccctttaat | gttcaggatc | ttttccgttt  | tgatcaagga | 1080 |
| atcttccctg  | ctgagataga | agatcttgca | cagaaacaag | ttgcgggtga  | tttgacgcaa | 1140 |
| ccatcacgat  | ttttgttgaa | ggttcttgct | ggtgcgaata | tcggtgctga  | attccatttg | 1200 |
| gatagtggga  | aaacctatat | cgtaggaagt | gatccgcagg | ttgcagacat  | tgtcttaagt | 1260 |
| gatatgagta  | tttcgcgcca | acatgcgaag | atcattatcg | gaaatgataa  | ttcagttttg | 1320 |
| attgaagatc  | tgggtagtaa | gaatggcgtg | attggtgaag | ggcgcaagat  | tgaacatcaa | 1380 |
| tctacgctct  | ctgcgaatca | agttgttgct | ctaggaacaa | cgttattctt  | acttgtcgac | 1440 |
| tatgctgctc  | cttccgatac | ggtaatggcg | acgatttctt | ctgaagatta  | tgggttattt | 1500 |
| ggtcgtccgc  | aatctcctga | agagattgct | gccagagctg | cggaagagga  | agaagagaag | 1560 |
| agaaaacgtg  | ctacgttgcc | aacaggtgct | tttatattaa | ccttgttcat  | tggaggggta | 1620 |
| gctctgctct  | ttggaatagg | aacagcttct | ttgttccata | cgaaggaagt  | agtttctata | 1680 |
| gatcaaatacg | atgtgattca | tgatattgaa | catgtaattc | agcagtttcc  | aactgtacgg | 1740 |
| tttacgttca  | ataagaacaa | cggacagttg | ttcttaattg | ggcatgtaag  | aaatagcatt | 1800 |
| gataagagcg  | agttacttta | caaagtggat | gctctctcgt | ttgtcaagtc  | ggtagatgat | 1860 |
| aacgtgatcg  | atgacgaggc | agtatggcaa | gagatgaata | ttctcttgct  | taagaatcca | 1920 |
| gaatttaaag  | gtatcagcat | gcaatctcca | gagccgggga | tttttgtaat  | cagcgggtat | 1980 |
| ctaaagacag  | aagaacaagc | agcttggttg | gctgattatc | taaatctaca  | ttttaattac | 2040 |
| ctttcactat  | tggataataa | ggtgattatc | gaatcacaag | tcatgaaagc  | tcttgctgga | 2100 |

catcttgtgc aatcagggtt tgcgaacggt catgtgtcct tcaccaatgg tgaagctggt 2160  
 ttgacaggat atatcaataa taaagatgca gataaattcc gaacggttgt gcaagaactg 2220  
 caagatattg cagggattcg tgcggtgaag aattttgtcg ttttgctgcc tgcagaagaa 2280  
 ggtgttattg atctaaatat gcggtatcca ggccggtatc gggtaaccgg tttttcaaag 2340  
 tgcggggata ttagtattaa tgtttagtatt aatgggcgta ttttaactcg aggcgatatt 2400  
 ttagatggaa tgacggtaac aagcattcaa tcgcattgta tctttttaga acgggaaggg 2460  
 ttgaaatata aaattgagta caataaatag 2490

<210> 98  
 <211> 829  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 98

Met Gly Ile Arg Leu Val Ile Asp Lys Gly Pro Leu Ser Gly Thr Val  
 1 5 10 15

Leu Ile Leu Glu Asn Gly Thr Ser Trp Ser Leu Gly Ser Asp Gly Lys  
 20 25 30

Ala Ser Asp Ile Leu Leu Gln Asp Glu Lys Leu Ala Pro Ser Gln Ile  
 35 40 45

Arg Ile Thr Leu Lys Asp Gly Glu Tyr Tyr Leu Glu Asn Leu Asp Ala  
 50 55 60

Leu Arg Pro Val Ser Val Asp Gly Thr Val Ile Thr Ala Pro Val Leu  
 65 70 75 80

Leu Lys Asp Gly Val Ser Phe Val Met Gly Ser Cys Gln Val Ser Phe  
 85 90 95

Phe Lys Gly Glu Glu Val Glu Gly Asp Ile Glu Leu Ser Phe Gln Thr  
 100 105 110

Glu Gly Gly Asn Glu Gly Glu Pro Ala Ala Gln Gly Ser Ser Ser Val  
 115 120 125

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Lys Lys Glu Glu Asp Lys Gly Glu Val Leu Ala Pro Phe Asn Val Gln  
340 345 350

Asp Leu Phe Arg Phe Asp Gln Gly Ile Phe Pro Ala Glu Ile Glu Asp  
355 360 365

Leu Ala Gln Lys Gln Val Ala Val Asp Leu Thr Gln Pro Ser Arg Phe  
370 375 380

Leu Leu Lys Val Leu Ala Gly Ala Asn Ile Gly Ala Glu Phe His Leu  
385 390 395 400

Asp Ser Gly Lys Thr Tyr Ile Val Gly Ser Asp Pro Gln Val Ala Asp  
405 410 415

Ile Val Leu Ser Asp Met Ser Ile Ser Arg Gln His Ala Lys Ile Ile  
420 425 430

Ile Gly Asn Asp Asn Ser Val Leu Ile Glu Asp Leu Gly Ser Lys Asn  
435 440 445

Gly Val Ile Val Glu Gly Arg Lys Ile Glu His Gln Ser Thr Leu Ser  
450 455 460

Ala Asn Gln Val Val Ala Leu Gly Thr Thr Leu Phe Leu Leu Val Asp  
465 470 475 480

Tyr Ala Ala Pro Ser Asp Thr Val Met Ala Thr Ile Ser Ser Glu Asp  
485 490 495

Tyr Gly Leu Phe Gly Arg Pro Gln Ser Pro Glu Glu Ile Ala Ala Arg  
500 505 510

Ala Ala Glu Glu Glu Glu Lys Arg Lys Arg Ala Thr Leu Pro Thr  
515 520 525

Gly Ala Phe Ile Leu Thr Leu Phe Ile Gly Gly Leu Ala Leu Leu Phe  
530 535 540

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gly<br>545 | Ile        | Gly        | Thr        | Ala        | Ser<br>550 | Leu        | Phe        | His        | Thr        | Lys<br>555 | Glu        | Val        | Val        | Ser        | Ile<br>560 |
| Asp        | Gln        | Ile        | Asp        | Leu<br>565 | Ile        | His        | Asp        | Ile        | Glu<br>570 | His        | Val        | Ile        | Gln        | Gln<br>575 | Phe        |
| Pro        | Thr        | Val        | Arg<br>580 | Phe        | Thr        | Phe        | Asn        | Lys<br>585 | Asn        | Asn        | Gly        | Gln        | Leu<br>590 | Phe        | Leu        |
| Ile        | Gly        | His<br>595 | Val        | Arg        | Asn        | Ser        | Ile<br>600 | Asp        | Lys        | Ser        | Glu        | Leu<br>605 | Leu        | Tyr        | Lys        |
| Val        | Asp<br>610 | Ala        | Leu        | Ser        | Phe        | Val<br>615 | Lys        | Ser        | Val        | Asp        | Asp<br>620 | Asn        | Val        | Ile        | Asp        |
| Asp<br>625 | Glu        | Ala        | Val        | Trp        | Gln<br>630 | Glu        | Met        | Asn        | Ile        | Leu<br>635 | Leu        | Ser        | Lys        | Asn        | Pro<br>640 |
| Glu        | Phe        | Lys        | Gly        | Ile<br>645 | Ser        | Met        | Gln        | Ser        | Pro<br>650 | Glu        | Pro        | Gly        | Ile        | Phe<br>655 | Val        |
| Ile        | Ser        | Gly        | Tyr<br>660 | Leu        | Lys        | Thr        | Glu        | Glu<br>665 | Gln        | Ala        | Ala        | Cys        | Leu<br>670 | Ala        | Asp        |
| Tyr        | Leu        | Asn<br>675 | Leu        | His        | Phe        | Asn        | Tyr<br>680 | Leu        | Ser        | Leu        | Leu        | Asp<br>685 | Asn        | Lys        | Val        |
| Ile        | Ile<br>690 | Glu        | Ser        | Gln        | Val        | Met<br>695 | Lys        | Ala        | Leu        | Ala        | Gly<br>700 | His        | Leu        | Val        | Gln        |
| Ser<br>705 | Gly        | Phe        | Ala        | Asn        | Val<br>710 | His        | Val        | Ser        | Phe        | Thr<br>715 | Asn        | Gly        | Glu        | Ala        | Val<br>720 |
| Leu        | Thr        | Gly        | Tyr        | Ile<br>725 | Asn        | Asn        | Lys        | Asp        | Ala<br>730 | Asp        | Lys        | Phe        | Arg        | Thr<br>735 | Val        |
| Val        | Gln        | Glu        | Leu<br>740 | Gln        | Asp        | Ile        | Ala        | Gly<br>745 | Ile        | Arg        | Ala        | Val        | Lys<br>750 | Asn        | Phe        |

Val Val Leu Leu Pro Ala Glu Glu Gly Val Ile Asp Leu Asn Met Arg  
755 760 765

Tyr Pro Gly Arg Tyr Arg Val Thr Gly Phe Ser Lys Cys Gly Asp Ile  
770 775 780

Ser Ile Asn Val Val Val Asn Gly Arg Ile Leu Thr Arg Gly Asp Ile  
785 790 795 800

Leu Asp Gly Met Thr Val Thr Ser Ile Gln Ser His Cys Ile Phe Leu  
805 810 815

Glu Arg Glu Gly Leu Lys Tyr Lys Ile Glu Tyr Asn Lys  
820 825

<210> 99  
<211> 525  
<212> DNA  
<213> Chlamydia trachomatis

<400> 99  
ttggaggatt acgtggcttc tcctcatctt cgttccctag cgtgtttaga taaccacaa 60  
ctacccatag aaacacctct ctttgagcaa gaagctctct cccatgagct tctttctctt 120  
attcaggtgt tccgtaaatt atctgtccat cttctctctg aaatcgaaaa attatctcag 180  
aaactaaaac ctgagcttct tgaacttgct gtcctcgtct gtgaaaaatt tctgtacaga 240  
aagcttgcct gtacagaaga acttgctctc ctaatctccg cagctctgca acatcattta 300  
gctacttatg ccgtctctcc cataaaaata ggtttacatc ctgaagatct ttcaaacctta 360  
tctaaatggg taatccttca cgatgttccc ttactcaaaa atatcgaatt cattgcagat 420  
cctttatgca agaaagctag ctataaaaata gaactccctt caggaattct gagacaagac 480  
atcggggaag agctgtccca tctactgagt gtactcactc cataa 525

<210> 100  
<211> 174  
<212> PRT  
<213> Chlamydia trachomatis

<400> 100

Leu Glu Asp Tyr Val Ala Ser Pro His Leu Arg Ser Leu Ala Cys Leu  
 1 5 10 15

Asp Asn Pro Gln Leu Pro Ile Glu Thr Pro Leu Phe Glu Gln Glu Ala  
 20 25 30

Leu Ser His Glu Leu Leu Ser Leu Ile Gln Val Phe Arg Lys Leu Ser  
 35 40 45

Val His Leu Leu Ser Glu Ile Glu Lys Leu Ser Gln Lys Leu Lys Pro  
 50 55 60

Glu Leu Leu Glu Leu Ala Val Leu Val Cys Glu Lys Phe Leu Tyr Arg  
 65 70 75 80

Lys Leu Ala Cys Thr Glu Glu Leu Ala Leu Leu Ile Ser Ala Ala Leu  
 85 90 95

Gln His His Leu Ala Thr Tyr Ala Val Ser Pro Ile Lys Ile Gly Leu  
 100 105 110

His Pro Glu Asp Leu Ser Asn Leu Ser Lys Trp Leu Ile Leu His Asp  
 115 120 125

Val Pro Leu Leu Lys Asn Ile Glu Phe Ile Ala Asp Pro Leu Cys Lys  
 130 135 140

Lys Ala Ser Tyr Lys Ile Glu Leu Pro Ser Gly Ile Leu Arg Gln Asp  
 145 150 155 160

Ile Gly Glu Glu Leu Ser His Leu Leu Ser Val Leu Thr Pro  
 165 170

<210> 101  
 <211> 420  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 101  
 atggaagatt ttgcagagta catcggttaaa aatttagtta ccgatcccaa cgccgttgag

60

attcgggtcat ccgaggacaa agccagcgca acccttaagc tggagatcca tgccgcttct 120  
gaagatattg gaaagatcat cgggagaaaa ggacaaacca tacaagcgct aagaaccatt 180  
ctaaaacgtg taggcgctag attgcagaaa aaaatccttg ttgagcttgc tcaacctgaa 240  
aacggctctc tcacagacga agaagttttg tcttttagatt atatctctgc agcttctgcc 300  
gaagatttcg aagaagattc ttcttttgct gaaaatagca tcgaagaaga accttcggtc 360  
attgtacgat ctcttgcagg tgtatgcca ggtttagct gctctcatca tcatgattag 420

<210> 102  
<211> 139  
<212> PRT  
<213> Chlamydia trachomatis

<400> 102

Met Glu Asp Phe Ala Glu Tyr Ile Val Lys Asn Leu Val Thr Asp Pro  
1 5 10 15

Asn Ala Val Glu Ile Arg Ser Ser Glu Asp Lys Ala Ser Ala Thr Leu  
20 25 30

Lys Leu Glu Ile His Ala Ala Ser Glu Asp Ile Gly Lys Ile Ile Gly  
35 40 45

Arg Lys Gly Gln Thr Ile Gln Ala Leu Arg Thr Ile Leu Lys Arg Val  
50 55 60

Gly Ala Arg Leu Gln Lys Lys Ile Leu Val Glu Leu Ala Gln Pro Glu  
65 70 75 80

Asn Gly Ser Leu Thr Asp Glu Glu Val Leu Ser Leu Asp Tyr Ile Ser  
85 90 95

Ala Ala Ser Ala Glu Asp Phe Glu Glu Asp Ser Ser Phe Ala Glu Asn  
100 105 110

Ser Ile Glu Glu Glu Pro Ser Val Ile Val Arg Ser Leu Ala Gly Val  
115 120 125

Cys Pro Gly Cys Ser Cys Ser His His His Asp  
 130 135

<210> 103  
 <211> 279  
 <212> DNA  
 <213> Chlamydia trachomatis

<400> 103  
 atgaaggaag aaattctcgc gctacttgat catttatata cggagcagga aagacgatta 60  
 atgtcgctag ggacgacgat tgttcctgga ttgacgaaag aggatctttt acagcctatg 120  
 gattatgatg aacttgagga gaacccttct tttagatttg aagaaggagt tttgaatgga 180  
 ataggagaga ctcgagccgc attatattct tttttttctg atctagaaga ctccttttgc 240  
 gtggagtctt ctagcgatac gagcctctgt aaggattag 279

<210> 104  
 <211> 92  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 104  
 Met Lys Glu Glu Ile Leu Ala Leu Leu Asp His Leu Tyr Thr Glu Gln  
 1 5 10 15  
 Glu Arg Arg Leu Met Ser Leu Gly Thr Thr Ile Val Pro Gly Leu Thr  
 20 25 30  
 Lys Glu Asp Leu Leu Gln Pro Met Asp Tyr Asp Glu Leu Glu Glu Asn  
 35 40 45  
 Pro Ser Phe Arg Phe Glu Glu Gly Val Leu Asn Gly Ile Gly Glu Thr  
 50 55 60  
 Arg Ala Ala Leu Tyr Ser Phe Phe Ser Asp Leu Glu Asp Ser Phe Cys  
 65 70 75 80  
 Val Glu Ser Ser Ser Asp Thr Ser Leu Cys Lys Asp  
 85 90

<210> 105  
 <211> 507  
 <212> DNA  
 <213> Chlamydia trachomatis  
  
 <400> 105  
 atgtggcata aagaaccaat gcatgctgta ttacagctac ctgaaacacc tctgggttaca 60  
 ggaacaacga actctgcaac ggctgatgag attataacac gatttgctaa ggattctaac 120  
 cctctcatcg ttactgttta ctatatattac cagtctgttc tcgtcgcgca aaataacttg 180  
 tctctagttg cagagcaatt gcaagctaatt gctgccgcgc aaacattcct gaacaatgaa 240  
 gaagcgctat accaatacac taccattcca aaaaaccaag taaactctca aaactcctct 300  
 tattttacaaa acgtacaatc ggtaaaccaa gcagtcggag catctagaca agcgattcaa 360  
 aaccaaatat ctgggtcttgg aaatgcttct caagtgattt ccagtaactt gaacacgaat 420  
 aataatatta ttcaacagtc cctacaagtc ggtcaggcgc tcattcaaac gttttcacaa 480  
 atcgtttagct tgatcgcgaa tatctaa 507

<210> 106  
 <211> 168  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 106  
  
 Met Trp His Lys Glu Pro Met His Ala Val Leu Gln Leu Pro Glu Thr  
 1 5 10 15  
  
 Pro Leu Val Thr Gly Thr Thr Asn Ser Ala Thr Ala Asp Glu Ile Ile  
 20 25 30  
  
 Thr Arg Phe Ala Lys Asp Ser Asn Pro Leu Ile Val Thr Val Tyr Tyr  
 35 40 45  
  
 Ile Tyr Gln Ser Val Leu Val Ala Gln Asn Asn Leu Ser Leu Val Ala  
 50 55 60  
  
 Glu Gln Leu Gln Ala Asn Ala Ala Ala Gln Thr Phe Leu Asn Asn Glu  
 65 70 75 80

Glu Ala Leu Tyr Gln Tyr Thr Thr Ile Pro Lys Asn Gln Val Asn Ser  
85 90 95

Gln Asn Ser Ser Tyr Leu Gln Asn Val Gln Ser Val Asn Gln Ala Val  
100 105 110

Gly Ala Ser Arg Gln Ala Ile Gln Asn Gln Ile Ser Gly Leu Gly Asn  
115 120 125

Ala Ser Gln Val Ile Ser Ser Asn Leu Asn Thr Asn Asn Asn Ile Ile  
130 135 140

Gln Gln Ser Leu Gln Val Gly Gln Ala Leu Ile Gln Thr Phe Ser Gln  
145 150 155 160

Ile Val Ser Leu Ile Ala Asn Ile  
165

<210> 107  
<211> 486  
<212> DNA  
<213> Chlamydia psittaci

<400> 107  
gtgcgcatatc taccctttga tccttatgga gcattacctc ctcaaggagt aaataaagat 60  
cctcatagca atataccttt aaatcagaag atttctgatg aaatagctaa aaatgaagct 120  
atgcgtttgg ctttgcttgc tattactgat caagaaaaag acaaaagaaa gagaaaacat 180  
cggtttataaa ttcttaaccg caaacaagca aaagtgtcc tatctcaatt gcgaaatgta 240  
gatttagact ttcaaagttt gaaaaatgct ggtttataaag aagaagaaga taacgaagaa 300  
gataatgaag aatcttcaaa acaagggaaa actttccata ttgctagtag taagaagcct 360  
gtgaagatag gggcatctgc agctcaggct attgctgatg ctgcagaggc ttgggttatt 420  
gctcgcaata gaggagtctt ggatatggcc tccctattat tctggcataa agatgatgag 480  
tggttaa 486

<210> 108  
<211> 161  
<212> PRT

<213> Chlamydia psittaci

<400> 108

Val Arg Ile Leu Pro Phe Asp Pro Tyr Gly Ala Leu Pro Pro Gln Gly  
1 5 10 15

Val Asn Lys Asp Pro His Ser Asn Ile Pro Leu Asn Gln Lys Ile Ser  
20 25 30

Asp Glu Ile Ala Lys Asn Glu Ala Met Arg Leu Ala Leu Leu Ala Ile  
35 40 45

Thr Asp Gln Glu Lys Asp Lys Arg Lys Arg Lys His Arg Phe Lys Ile  
50 55 60

Leu Asn Arg Lys Gln Ala Lys Val Leu Leu Ser Gln Leu Arg Asn Val  
65 70 75 80

Asp Leu Asp Phe Gln Ser Leu Lys Asn Ala Gly Leu Lys Glu Glu Glu  
85 90 95

Asp Asn Glu Glu Asp Asn Glu Glu Ser Ser Lys Gln Gly Lys Thr Phe  
100 105 110

His Ile Ala Ser Ser Lys Lys Pro Val Lys Ile Gly Ala Ser Ala Ala  
115 120 125

Gln Ala Ile Ala Asp Ala Ala Glu Ala Trp Val Ile Ala Arg Asn Arg  
130 135 140

Gly Val Leu Asp Met Ala Ser Leu Leu Phe Trp His Lys Asp Asp Glu  
145 150 155 160

Cys

<210> 109

<211> 447

<212> DNA

<213> Chlamydia psittaci

<400> 109  
atgaaaagtg aacgtctgaa aaaactcgaa tctgaattac gtgacttaac ccagtggatg 60  
caattggggtt tagttccaaa aaaagaaatc gatagacata aggaagaaat acgttcttta 120  
gaaaacaaaa tccatgaaga gaaggaacgc ctgcaacttc taaaagaaag tggcgaagtt 180  
gaagagtttg ttactccaag acgtagccct gcaaaaacgg tatatcctga cgggtccaagc 240  
atgtcagata tggaatttgt tgaagctaca gagacagaaa ttgatattga tccaggtgaa 300  
accgtagagc tcgaacttcc tgatgaagaa cgtgaagaag gcgctgtaga aatcgattat 360  
tccagtgatg acgatgaaga tcctttcagt gatcgcaatc gttggagacg tgggggcatt 420  
gttgaccccg atgctaata atggtaa 447

<210> 110  
<211> 148  
<212> PRT  
<213> Chlamydia psittaci

<400> 110

Met Lys Ser Glu Arg Leu Lys Lys Leu Glu Ser Glu Leu Arg Asp Leu  
1 5 10 15

Thr Gln Trp Met Gln Leu Gly Leu Val Pro Lys Lys Glu Ile Asp Arg  
20 25 30

His Lys Glu Glu Ile Arg Ser Leu Glu Asn Lys Ile His Glu Glu Lys  
35 40 45

Glu Arg Leu Gln Leu Leu Lys Glu Ser Gly Glu Val Glu Glu Phe Val  
50 55 60

Thr Pro Arg Arg Ser Pro Ala Lys Thr Val Tyr Pro Asp Gly Pro Ser  
65 70 75 80

Met Ser Asp Met Glu Phe Val Glu Ala Thr Glu Thr Glu Ile Asp Ile  
85 90 95

Asp Pro Gly Glu Thr Val Glu Leu Glu Leu Pro Asp Glu Glu Arg Glu  
100 105 110

Glu Gly Ala Val Glu Ile Asp Tyr Ser Ser Asp Asp Asp Glu Asp Pro  
 115 120 125

Phe Ser Asp Arg Asn Arg Trp Arg Arg Gly Gly Ile Val Asp Pro Asp  
 130 135 140

Ala Asn Glu Trp  
 145

<210> 111  
 <211> 972  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 111  
 atgaaacggc tgcttttttg cgtttgcgca ctctctttct catgctttac ctacggttca 60  
 gctctaaaac aagattcttc tgttatgaag gaaaccttcc gtaacaacta cggaattatt 120  
 gtatcaggaa aagattgggt aaaacgaggc tgtgatggga caatcaccaa agtttttaaag 180  
 gatgggtcta ctctttatga aatttacgtt cagggctctc ttcattggcg gataacgtta 240  
 acattcccc attctacgac tcttgctgta ataaaaactt acgatcaggg aaggcttggt 300  
 tcatataaaa cattcttttc taatgggtta ccttctcaag aagaattata ccaagaagat 360  
 ggctctcttg ttgtgactcg ctggcctgac aacaaaaata gcgataccat caccgatcct 420  
 tattttactg agactaccta ccagggtcgt gtacttgaag ggagctactc ctcattttaat 480  
 gggaaatata catcaacaat tcgcaatgga gaaggcatac gctcgaactt ttctccaagt 540  
 aacgtccttc tttctgaaga aacctttaac gatggcggtta tggtaaaaag aactaccttc 600  
 tatgctacta gagatcctga aactataacg cattatatta atggccaacc tcatggattg 660  
 cgtttaacct atctccctgg aggattcct aacactattg aagaatggcg ttatggttac 720  
 caagatggaa ctacaacagt atttaaaaac gggttgcaaag ctgctgagat tccttttgta 780  
 aaaggatcta aggaaggatg tgaattacgc tataatgaag acgaagttat tgccgaagaa 840  
 gtgtcttgga gaaataactt ccctcatggt atgagaaaaga tctatgctgc cgggtgtttat 900  
 aaatgcgagt ggtaccaccg cggacgccta gtctcaaaaag ctaagttcga gagactcaat 960  
 aatgcaggat aa 972

<210> 112  
 <211> 323  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 112

Met Lys Arg Leu Leu Phe Cys Val Cys Ala Leu Ser Phe Ser Cys Phe  
 1 5 10 15

Thr Tyr Gly Ser Ala Leu Lys Gln Asp Ser Ser Val Met Lys Glu Thr  
 20 25 30

Phe Arg Asn Asn Tyr Gly Ile Ile Val Ser Gly Lys Asp Trp Val Lys  
 35 40 45

Arg Gly Cys Asp Gly Thr Ile Thr Lys Val Leu Lys Asp Gly Ser Thr  
 50 55 60

Leu Tyr Glu Ile Tyr Val Gln Gly Leu Leu His Gly Glu Ile Thr Leu  
 65 70 75 80

Thr Phe Pro His Ser Thr Thr Leu Ala Val Ile Lys Thr Tyr Asp Gln  
 85 90 95

Gly Arg Leu Val Ser Tyr Lys Thr Phe Phe Ser Asn Gly Leu Pro Ser  
 100 105 110

Gln Glu Glu Leu Tyr Gln Glu Asp Gly Ser Leu Val Val Thr Arg Trp  
 115 120 125

Pro Asp Asn Lys Asn Ser Asp Thr Ile Thr Asp Pro Tyr Phe Thr Glu  
 130 135 140

Thr Thr Tyr Gln Gly Arg Val Leu Glu Gly Ser Tyr Ser Ser Phe Asn  
 145 150 155 160

Gly Lys Tyr Thr Ser Thr Ile Arg Asn Gly Glu Gly Ile Arg Ser Asn  
 165 170 175

Phe Ser Pro Ser Asn Val Leu Leu Ser Glu Glu Thr Phe Asn Asp Gly

| 180         |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val         | Met | Val | Lys | Arg | Thr | Thr | Phe | Tyr | Ala | Thr | Arg | Asp | Pro | Glu | Thr |
|             |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ile         | Thr | His | Tyr | Ile | Asn | Gly | Gln | Pro | His | Gly | Leu | Arg | Leu | Thr | Tyr |
|             | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Leu         | Pro | Gly | Gly | Ile | Pro | Asn | Thr | Ile | Glu | Glu | Trp | Arg | Tyr | Gly | Tyr |
| 225         |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Gln         | Asp | Gly | Thr | Thr | Thr | Val | Phe | Lys | Asn | Gly | Cys | Lys | Ala | Ala | Glu |
|             |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Ile         | Pro | Phe | Val | Lys | Gly | Ser | Lys | Glu | Gly | Cys | Glu | Leu | Arg | Tyr | Asn |
|             |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Glu         | Asp | Glu | Val | Ile | Ala | Glu | Glu | Val | Ser | Trp | Arg | Asn | Asn | Phe | Pro |
|             |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| His         | Gly | Met | Arg | Lys | Ile | Tyr | Ala | Ala | Gly | Val | Tyr | Lys | Cys | Glu | Trp |
|             | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Tyr         | His | Arg | Gly | Arg | Leu | Val | Ser | Lys | Ala | Lys | Phe | Glu | Arg | Leu | Asn |
| 305         |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asn Ala Gly |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 113  
 <211> 975  
 <212> DNA  
 <213> Chlamydia psittaci

|  |     |
|--|-----|
| <400> 113  |     |
| atgacatctg caatgcctcg tgtggctagc cttgtagtgg gcagtagaaa tgtgtttatg  | 60  |
| caaacagcta tgcagggagc caagaaaggc gatgtaggct gctgcattag gcagttttgtt | 120 |
| acgaatggaa acaaccattt agcacgcttt gtcggaagta caaaaaatat agataaggca  | 180 |
| tttaagtttg ctaaatccgt ctctgaattt agctgcggtg ttattgaaag cacaggtgat  | 240 |

acaggacctg ctcttcagat aagtaaaaac gttgcatcga ctttaagcac ggctagaaat 300  
gttgctgcct tgtctaattgt gttcactggg gcgattcctg gattcgctcct ttcctcaaag 360  
aattgctata atcatattaa gaaatgtttt gctccagaaa ctgagtacga ttgcggtagt 420  
attgagaaaag gcttgcctta taacaagctt tatctcacta agggatgatca tgtgttgggg 480  
gcgattaaaag aagggttgctc tgcagttggc gcggggaactt acgttgcaac gtttggtgctc 540  
agccgtccgg tgctcttggc aaacaagctt gctcacaagc ctttctcttc ttcaggagtg 600  
aaggcagcat tttgtaacag cgtaacctat atgatgacag caaaccacgc tgcagggggt 660  
atcggcggag cagcagcctt gctctatgaa aaccgtgtat ataaacgcgc ttctgaggga 720  
ttgttagctt ctaaaatgac agagagtctg gattctgaag tttacgatca agtgtctaaa 780  
ggcttgaaaag agtcgcacta ccaagctgtt aaaaaaacia tacttggaat tttagaaaaa 840  
gcatttgaat tgatcgctga tatattcgat ttcattgctt taccaattac tgcttcagtt 900  
cgcttggtcaa taaaagcggg attagtcaca gtatccagtg gtttcgggtct ttacagcgctc 960  
tggtgtcaatt cttaa 975

<210> 114  
<211> 324  
<212> PRT  
<213> Chlamydia psittaci

<400> 114

Met Thr Ser Ala Met Pro Arg Val Ala Ser Leu Val Val Gly Ser Arg  
1 5 10 15

Asn Val Phe Met Gln Thr Ala Met Gln Gly Ala Lys Lys Gly Asp Val  
20 25 30

Gly Cys Cys Ile Arg Gln Phe Val Thr Asn Gly Asn Asn His Leu Ala  
35 40 45

Arg Phe Val Gly Ser Thr Lys Asn Ile Asp Lys Ala Phe Lys Phe Ala  
50 55 60

Lys Ser Val Ser Glu Phe Ser Cys Gly Val Ile Glu Ser Thr Gly Asp  
65 70 75 80

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Gly | Pro | Ala | Leu | Gln | Ile | Ser | Lys | Asn | Val | Ala | Ser | Thr | Leu | Ser | 85  | 90  | 95  |
| Thr | Ala | Arg | Asn | Val | Val | Ala | Leu | Ser | Asn | Val | Phe | Thr | Gly | Ala | Ile | 100 | 105 | 110 |
| Pro | Gly | Phe | Val | Leu | Ser | Ser | Lys | Asn | Cys | Tyr | Asn | His | Ile | Lys | Lys | 115 | 120 | 125 |
| Cys | Phe | Ala | Pro | Glu | Thr | Glu | Tyr | Asp | Cys | Gly | Ser | Ile | Glu | Lys | Gly | 130 | 135 | 140 |
| Leu | Pro | Tyr | Asn | Lys | Leu | Tyr | Leu | Thr | Lys | Gly | Asp | His | Val | Leu | Gly | 145 | 150 | 155 |
| Ala | Ile | Lys | Glu | Gly | Cys | Ser | Ala | Val | Gly | Ala | Gly | Thr | Tyr | Val | Ala | 165 | 170 | 175 |
| Thr | Phe | Gly | Val | Ser | Arg | Pro | Val | Leu | Leu | Ala | Asn | Lys | Leu | Ala | His | 180 | 185 | 190 |
| Lys | Pro | Phe | Leu | Ser | Ser | Gly | Val | Lys | Ala | Ala | Phe | Cys | Asn | Ser | Val | 195 | 200 | 205 |
| Thr | Tyr | Met | Met | Thr | Ala | Asn | His | Ala | Ala | Gly | Val | Ile | Gly | Gly | Ala | 210 | 215 | 220 |
| Ala | Ala | Leu | Leu | Tyr | Glu | Asn | Arg | Val | Tyr | Lys | Arg | Ala | Ser | Glu | Gly | 225 | 230 | 235 |
| Leu | Leu | Ala | Ser | Lys | Met | Thr | Glu | Ser | Leu | Asp | Ser | Glu | Val | Tyr | Asp | 245 | 250 | 255 |
| Gln | Val | Ser | Lys | Gly | Leu | Lys | Glu | Ser | His | Tyr | Gln | Ala | Val | Lys | Lys | 260 | 265 | 270 |
| Thr | Ile | Leu | Gly | Ile | Leu | Glu | Lys | Ala | Phe | Glu | Leu | Ile | Ala | Asp | Ile | 275 | 280 | 285 |

Phe Asp Phe Ile Ala Leu Pro Ile Thr Ala Ser Val Arg Leu Ala Ile  
 290 295 300

Lys Ala Gly Leu Val Thr Val Ser Ser Gly Phe Gly Leu Tyr Ser Val  
 305 310 315 320

Trp Val Asn Ser

<210> 115  
 <211> 423  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 115  
 atgagtttgg atttttttaga agaatttttac cgtcgtttcta tttgtaacaa aggaacggca 60  
 tttcctgagg gcttcatgga tattgccgat gtcctatccc attctgcgtc tgaacttaaa 120  
 atcgagtcta tgagcgatct tcctgttaac aatttcatca ttgcagaatc ggcagataaa 180  
 ctcactttat ttaatgcaga ttttgctggt tggttagtgc ctgagcttgt ccaaggagaa 240  
 gctgtgactc gaggatacat cgctttatac cattctggag gggattatac tccagaaatg 300  
 gcatttcaag cctctgggga gtacaatcaa tcagcattaa ttcttgaagc acttcagata 360  
 tatctacaag acataaaaga taccgaaagc acgctacgct ctttccgctt taatcaagac 420  
 tag 423

<210> 116  
 <211> 140  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 116

Met Ser Leu Asp Phe Leu Glu Glu Phe Tyr Arg Arg Ser Ile Cys Asn  
 1 5 10 15

Lys Gly Thr Ala Phe Pro Glu Gly Phe Met Asp Ile Ala Asp Val Leu  
 20 25 30

Ser His Ser Ala Ser Glu Leu Lys Ile Glu Ser Met Ser Asp Leu Pro  
 35 40 45

Val Asn Asn Phe Ile Ile Ala Glu Ser Ala Asp Lys Leu Thr Leu Phe  
50 55 60

Asn Ala Asp Phe Ala Val Trp Leu Val Pro Glu Leu Val Gln Gly Glu  
65 70 75 80

Ala Val Thr Arg Gly Tyr Ile Ala Leu Tyr His Ser Gly Gly Asp Tyr  
85 90 95

Thr Pro Glu Met Ala Phe Gln Ala Ser Gly Glu Tyr Asn Gln Ser Ala  
100 105 110

Leu Ile Leu Glu Ala Leu Gln Ile Tyr Leu Gln Asp Ile Lys Asp Thr  
115 120 125

Glu Ser Thr Leu Arg Ser Phe Arg Phe Asn Gln Asp  
130 135 140

<210> 117  
<211> 849  
<212> DNA  
<213> Chlamydia psittaci

<400> 117  
atggaattaa ataaaacatc cgagtctttg tacaattgca agacagatcg ccattcagta 60  
caacaagaag taggtccaga gcctaaagat aaccgtgacg tttaaagtgtt ttctttagaa 120  
ggccgtcaac aatcaaaaaca agatcgtcag gataaagttt ccagtaaaga ttctcgtcaa 180  
gaatctcgag gagctgatga taagcatgta gaagagaaaa catcagcagt atcttctaaa 240  
gaagaagata aagaagagag tgatgggttc atggcttatg acaatcctac agcaggcatg 300  
gcatttgtag atgttgctgc ttctgtatct agtgaagccg ttgtagaaag tactacagta 360  
gctatcggca gtgcagatctt acagtgggtg caagatgtta ttgctagtac tgtagaatct 420  
atgatgggtg ctgatgttaa cggtcagcaa ttaatcgagt tagttttaga tgctgaaggt 480  
aatgttcctg acatcttttgc aggtgcgaat ttaacattag tacaaacagg aacagaccta 540  
tctgtaaaat tctctaattt tgtagataat gctcagatgg cagaagcaat gagtctcatt 600  
gtgaataacc cttctcagct tgctgggtta gtagaggcat taaaaaatcg tcatttgaat 660

ttgacagaat tggctgttgg atcaagtatt gtacaattgc caactattga agaggtgcaa 720  
acacctctac atatgattgc tgctacaatt catcaaagag atgaagagag agatcaagaa 780  
ggacaagatc agcagcaaca gcaagatcaa gaacaaaacc aatataaagt tgaagaagca 840  
cgtttgtaa 849

<210> 118  
<211> 282  
<212> PRT  
<213> Chlamydia psittaci

<400> 118

Met Glu Leu Asn Lys Thr Ser Glu Ser Leu Tyr Asn Cys Lys Thr Asp  
1 5 10 15

Arg His Ser Val Gln Gln Glu Val Gly Pro Glu Pro Lys Asp Asn Arg  
20 25 30

Asp Val Lys Val Phe Ser Leu Glu Gly Arg Gln Gln Ser Lys Gln Asp  
35 40 45

Arg Gln Asp Lys Val Ser Ser Lys Asp Ser Arg Gln Glu Ser Arg Gly  
50 55 60

Ala Asp Asp Lys His Val Glu Glu Lys Thr Ser Ala Val Ser Ser Lys  
65 70 75 80

Glu Glu Asp Lys Glu Glu Ser Asp Gly Phe Met Ala Tyr Asp Asn Pro  
85 90 95

Thr Ala Gly Met Ala Phe Val Asp Val Ala Ala Ser Val Ser Ser Glu  
100 105 110

Ala Val Val Glu Ser Thr Thr Val Ala Ile Gly Ser Ala Asp Leu Gln  
115 120 125

Trp Val Gln Asp Val Ile Ala Ser Thr Val Glu Ser Met Met Val Ala  
130 135 140

Asp Val Asn Gly Gln Gln Leu Ile Glu Leu Val Leu Asp Ala Glu Gly  
 145 150 155 160

Asn Val Pro Asp Ile Phe Ala Gly Ala Asn Leu Thr Leu Val Gln Thr  
 165 170 175

Gly Thr Asp Leu Ser Val Lys Phe Ser Asn Phe Val Asp Asn Ala Gln  
 180 185 190

Met Ala Glu Ala Met Ser Leu Ile Val Asn Asn Pro Ser Gln Leu Ala  
 195 200 205

Gly Leu Val Glu Ala Leu Lys Asn Arg His Leu Asn Leu Thr Glu Leu  
 210 215 220

Ala Val Gly Ser Ser Ile Val Gln Leu Pro Thr Ile Glu Glu Val Gln  
 225 230 235 240

Thr Pro Leu His Met Ile Ala Ala Thr Ile His Gln Arg Asp Glu Glu  
 245 250 255

Arg Asp Gln Glu Gly Gln Asp Gln Gln Gln Gln Asp Gln Glu Gln  
 260 265 270

Asn Gln Tyr Lys Val Glu Glu Ala Arg Leu  
 275 280

<210> 119  
 <211> 261  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 119  
 atgagtagtg gtagcgggag cagttgctca gcatttaatt ttaatgacat gctcaatggc 60  
 gtatgtaagt acgtccaagg tgtgcaacaa tatttaacag aattagaaac ctcaacgcaa 120  
 ggtactgttg acttaggtac gatgtttaat ttgcagtttc gtatgcaaat tttatcacag 180  
 tacatggaag cagtatccaa catcttgaca gcagtgaaca cagagatgat tactatggca 240  
 agagctgtta aaggaagtta a 261

<210> 120  
 <211> 86  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 120

Met Ser Ser Gly Ser Gly Ser Ser Cys Ser Ala Phe Asn Phe Asn Asp  
 1 5 10 15

Met Leu Asn Gly Val Cys Lys Tyr Val Gln Gly Val Gln Gln Tyr Leu  
 20 25 30

Thr Glu Leu Glu Thr Ser Thr Gln Gly Thr Val Asp Leu Gly Thr Met  
 35 40 45

Phe Asn Leu Gln Phe Arg Met Gln Ile Leu Ser Gln Tyr Met Glu Ala  
 50 55 60

Val Ser Asn Ile Leu Thr Ala Val Asn Thr Glu Met Ile Thr Met Ala  
 65 70 75 80

Arg Ala Val Lys Gly Ser  
 85

<210> 121  
 <211> 729  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 121

|   |     |
|---|-----|
| atggaacctt atttagattt attagataaa aacatcaaag aaaaacatat gttagatcat | 60  |
| cccttttata tgaagtggtc taagggagaa ttaacgaaag agcagttaaa agaatacgct | 120 |
| aaggattact acctccacat caaagctttt cctcgttatc tttcagcagt tcatagccgc | 180 |
| tgtgataatt tagaagcgcg taaattgctt cttgataacc ttatggatga agaaacaggc | 240 |
| catcctaadc acatagatct atggaaaaat tttgcctatg cgttaggtgt tactgaggaa | 300 |
| gaattagaaa atcatgttcc tagtgcagca gcacaaaaga aagtggatac atttttacgt | 360 |
| tggtgtactg gagattcctt atctgctggg gtagctgctt tatataccta tgaaagccaa | 420 |
| atccctacag ttgcagagac taaaatctcg ggattaaaac agtatttcgg ctttacggct | 480 |

cctgaagatt atgagtactt cacagtacat caagatggtg atgtaagaca ttctcgtgaa 540  
gaaaaagaat taatagagtc gttgctaaat aatgatagcg ataaggttct acaagcttca 600  
aaagaagttt gtgatgcttt atacggcttt ttagatactt tcttagatga aaaagacgcc 660  
tgctcagcaa cttcatcttc tgttgcggtat tctaaaccat cttcatgttg ttgtcgttgc 720  
cgtcattaa 729

<210> 122  
<211> 242  
<212> PRT  
<213> Chlamydia psittaci

<400> 122

Met Glu Pro Tyr Leu Asp Leu Leu Asp Lys Asn Ile Lys Glu Lys His  
1 5 10 15

Met Leu Asp His Pro Phe Tyr Met Lys Trp Ser Lys Gly Glu Leu Thr  
20 25 30

Lys Glu Gln Leu Lys Glu Tyr Ala Lys Asp Tyr Tyr Leu His Ile Lys  
35 40 45

Ala Phe Pro Arg Tyr Leu Ser Ala Val His Ser Arg Cys Asp Asn Leu  
50 55 60

Glu Ala Arg Lys Leu Leu Leu Asp Asn Leu Met Asp Glu Glu Thr Gly  
65 70 75 80

His Pro Asn His Ile Asp Leu Trp Lys Asn Phe Ala Tyr Ala Leu Gly  
85 90 95

Val Thr Glu Glu Glu Leu Glu Asn His Val Pro Ser Ala Ala Ala Gln  
100 105 110

Lys Lys Val Asp Thr Phe Leu Arg Trp Cys Thr Gly Asp Ser Leu Ser  
115 120 125

Ala Gly Val Ala Ala Leu Tyr Thr Tyr Glu Ser Gln Ile Pro Thr Val  
130 135 140

Ala Glu Thr Lys Ile Ser Gly Leu Lys Gln Tyr Phe Gly Phe Thr Ala  
 145 150 155 160

Pro Glu Asp Tyr Glu Tyr Phe Thr Val His Gln Asp Val Asp Val Arg  
 165 170 175

His Ser Arg Glu Glu Lys Glu Leu Ile Glu Ser Leu Leu Asn Asn Asp  
 180 185 190

Ser Asp Lys Val Leu Gln Ala Ser Lys Glu Val Cys Asp Ala Leu Tyr  
 195 200 205

Gly Phe Leu Asp Thr Phe Leu Asp Glu Lys Asp Ala Cys Ser Ala Thr  
 210 215 220

Ser Ser Ser Val Ala Asp Ser Lys Pro Ser Ser Cys Cys Cys Arg Cys  
 225 230 235 240

Arg His

<210> 123  
 <211> 234  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 123  
 atgaatgaag gtattcaaac cgtttctttt aacaagacac accgactcac cgcgaaatct 60  
 acagttagtt tagaaatgcc cgtagcgaca cagaaacttc aaggtaaaga aggcatgccc 120  
 gcagcggcaa gtttagaagc tgatttctta agagcagaag ctatacttgc agaaatgcgt 180  
 gaaattcgcg gctgttttaga acattcattg gaaacgctag ttcctagaga ctag 234

<210> 124  
 <211> 77  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 124

Met Asn Glu Gly Ile Gln Thr Val Ser Phe Asn Lys Thr His Arg Leu

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | 5   | 10  | 15  |     |     |     |     |     |     |     |     |     |     |     |     |
| Thr | Ala | Lys | Ser | Thr | Val | Ser | Leu | Glu | Met | Pro | Val | Ala | Thr | Gln | Lys |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Leu | Gln | Gly | Lys | Glu | Gly | Met | Pro | Ala | Ala | Ala | Ser | Leu | Glu | Ala | Asp |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Phe | Leu | Arg | Ala | Glu | Ala | Ile | Leu | Ala | Glu | Met | Arg | Glu | Ile | Arg | Gly |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Cys | Leu | Glu | His | Ser | Leu | Glu | Thr | Leu | Val | Pro | Arg | Asp |     |     |     |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     |     |

<210> 125  
 <211> 231  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 125  
 atgaaaaata aactacatga tttgttgaat cagctttatg aaaatcaaaa atctcgttta 60  
 caaagcatgg gggagcagat cgtcccgaat ttaacttctg atgatgtatt acagcccatg 120  
 gattttttcta tgctggaaga aaatcctttc tttcggtttg aggaaggtgt tctttctggt 180  
 cttggagagg ctcgggcggc gattttggca ttatttgccg aagaaggtta a 231

<210> 126  
 <211> 76  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 126  
 Met Lys Asn Lys Leu His Asp Leu Leu Asn Gln Leu Tyr Glu Asn Gln  
 1 5 10 15  
 Lys Ser Arg Leu Gln Ser Met Gly Glu Gln Ile Val Pro Asn Leu Thr  
 20 25 30  
 Ser Asp Asp Val Leu Gln Pro Met Asp Phe Ser Met Leu Glu Glu Asn  
 35 40 45

Pro Phe Phe Arg Phe Glu Glu Gly Phe Phe Leu Val Leu Glu Arg Leu  
 50 55 60

Gly Arg Arg Phe Trp His Tyr Leu Pro Lys Lys Val  
 65 70 75

<210> 127  
 <211> 519  
 <212> DNA  
 <213> Chlamydia psittaci

<400> 127  
 atgtggttct cttctccagc acttcaaact agccctagag ccgctattga cgttcccggg 60  
 acatctatca caggtggacc aaatacagca acagccgatg aaattattgc aaaatttgcg 120  
 aaagattcca atcctctgat tatcaccgtg tactatgtat accagtctgt attggtagcg 180  
 caggacaact tatctattat cgctcaagaa cttcagtcta atgcttctgc ccagactttt 240  
 ttaaacaacc aagaagcttt ataccaatac gtaaccatac ctaagaacaa attaaacgat 300  
 aactcgtcgg cgttcttaca agatgttcaa tcaacaaacc aagctggttg agcttctcga 360  
 caagcactac aaaaccaaatt ttcagggtta ggaaatgggtg ctcagggttat ctcaagtaac 420  
 ttgaacacga acaataacat tatccaacag tctctacaag taggccaggc gttaattcaa 480  
 acgttctcac aaattgtaag tttgatagca aacatttaa 519

<210> 128  
 <211> 172  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 128

Met Trp Phe Ser Ser Pro Ala Leu Gln Thr Ser Pro Arg Ala Ala Ile  
 1 5 10 15

Asp Val Pro Gly Thr Ser Ile Thr Gly Gly Pro Asn Thr Ala Thr Ala  
 20 25 30

Asp Glu Ile Ile Ala Lys Phe Ala Lys Asp Ser Asn Pro Leu Ile Ile  
 35 40 45

Thr Val Tyr Tyr Val Tyr Gln Ser Val Leu Val Ala Gln Asp Asn Leu  
50 55 60

Ser Ile Ile Ala Gln Glu Leu Gln Ser Asn Ala Ser Ala Gln Thr Phe  
65 70 75 80

Leu Asn Asn Gln Glu Ala Leu Tyr Gln Tyr Val Thr Ile Pro Lys Asn  
85 90 95

Lys Leu Asn Asp Asn Ser Ser Ala Phe Leu Gln Asp Val Gln Ser Thr  
100 105 110

Asn Gln Ala Val Gly Ala Ser Arg Gln Ala Leu Gln Asn Gln Ile Ser  
115 120 125

Gly Leu Gly Asn Gly Ala Gln Val Ile Ser Ser Asn Leu Asn Thr Asn  
130 135 140

Asn Asn Ile Ile Gln Gln Ser Leu Gln Val Gly Gln Ala Leu Ile Gln  
145 150 155 160

Thr Phe Ser Gln Ile Val Ser Leu Ile Ala Asn Ile  
165 170

<210> 129  
<211> 1443  
<212> DNA  
<213> Chlamydia psittaci

<400> 129  
atgaacactc ccctgccttc agcagttccc tctaccaaca tgacgttaaa ggaagatgcc 60  
tcctcttcat cctcagcatc aacatcttcc agtattttta agactgcagc aggagatggt 120  
gcgctttccg tattcacttc cgaaggaacc acaccagctt ccttaaactc tctagttgct 180  
cttgcccttg cgcaaatttc tgcagcttct ggagaaaatg ccaatccttt acaagattgt 240  
gctcataatc ttgtcttcct ttctccagaa actattgaag ttgaaatact catctctgat 300  
cttcttcaaa ctttagagac tacagatctt ataaacacac aggaagagtc ctcaagttta 360  
ggaaaacaag aacagcgcct tcctcaagaa ggatgcaaac cacaggattt agcaccaaga 420

|  |      |
|--|------|
| tctacaatag attcgtacgg cacaccgaaa gcattacaac aacctgccgt gaaactcgct  | 480  |
| gtccgctatt cttctgcaaa ggctcctgat tctcggcctt atacaagttc ctccctcaccg | 540  |
| cagcatactt cgggacaatt tgcccaacgt gctgcccagg cgccaggaat actgcaacac  | 600  |
| tcccaaaciaa aaaaagatgg agagcaaatt tcttctcaat ctcaaatc ctttattgcg   | 660  |
| gagaaaaaag aacagcagat tttcaccaca aagtctcaag aatctcagca ggatcgtgaa  | 720  |
| aaccgagatc aaaaacaaga tcgcccaacat gatggccaac atcaagatga tgatgatgat | 780  |
| cagcaaaaag gtagggggaa aaaatataaa tcaaagactt ctgccgaagc agttcctgct  | 840  |
| gatctctccg tagcgcatct acgctatctt aatgaggtac gccaatctcg agaaattcat  | 900  |
| gttgaggaag aaaaaacatt taagaagaaa gcgcaatctc cgatggcact tttttctgct  | 960  |
| ccaactcctc cagcaggatt taccccaatt cctactccaa agattgaaaa cgtattcata  | 1020 |
| cgttttatga aacttatgga aaggattctg ggacaggccg aagccgaagc ccaagaatta  | 1080 |
| tatcttcgcg ttaaagagcg taccgataat gtagacacat taatgctgct catttctaaa  | 1140 |
| attaactctg aaaaagggtgc tattgactgg cgagatgatt cagaaatgaa agctctcgtg | 1200 |
| gatcaagcaa aaaaactggg tgtaacgata acagatactc tgcaatggtc tgaagaagag  | 1260 |
| aaaaaacttc taaaagaaaa tattcagatg cgtaaagaaa acctggaaaa aatcacccag  | 1320 |
| cttgaacgaa cagacatgca aaggcatctt caagaagtct cacaatgtca ccaagcacgc  | 1380 |
| tccaacgcct tgaaacttct caaagaactc atggatacct ttattttacaa tttgcgtccg | 1440 |
| taa  | 1443 |

<210> 130  
 <211> 480  
 <212> PRT  
 <213> Chlamydia psittaci

<400> 130

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Asn | Thr | Pro | Leu | Pro | Ser | Ala | Val | Pro | Ser | Thr | Asn | Met | Thr | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Glu | Asp | Ala | Ser | Ser | Ser | Ser | Ser | Ala | Ser | Thr | Ser | Ser | Ser | Ile |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Lys | Thr | Ala | Ala | Gly | Asp | Val | Ala | Leu | Ser | Val | Phe | Thr | Ser | Glu |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Gly | Thr | Thr | Pro | Ala | Ser | Leu | Asn | Ser | Leu | Val | Ala | Leu | Ala | Leu | Ala |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Gln | Ile | Ser | Ala | Ala | Ser | Gly | Glu | Asn | Ala | Asn | Pro | Leu | Gln | Asp | Cys |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ala | His | Asn | Leu | Val | Phe | Leu | Ser | Pro | Glu | Thr | Ile | Glu | Val | Glu | Ile |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Ile | Ser | Asp | Leu | Leu | Gln | Thr | Leu | Glu | Thr | Thr | Asp | Leu | Ile | Asn |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Thr | Gln | Glu | Glu | Ser | Ser | Ser | Leu | Gly | Lys | Gln | Glu | Gln | Arg | Leu | Pro |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Gln | Glu | Gly | Cys | Lys | Pro | Gln | Asp | Leu | Ala | Pro | Arg | Ser | Thr | Ile | Asp |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Ser | Tyr | Gly | Thr | Pro | Lys | Ala | Leu | Gln | Gln | Pro | Ala | Val | Lys | Leu | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Val | Arg | Tyr | Ser | Ser | Ala | Lys | Ala | Pro | Asp | Ser | Arg | Pro | Tyr | Thr | Ser |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ser | Ser | Ser | Pro | Gln | His | Thr | Ser | Gly | Gln | Phe | Ala | Gln | Arg | Ala | Ala |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Gln | Ala | Pro | Gly | Ile | Leu | Gln | His | Ser | Gln | Thr | Lys | Lys | Asp | Gly | Glu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Gln | Ile | Ser | Ser | Gln | Ser | His | Asn | Ser | Phe | Ile | Ala | Glu | Lys | Lys | Glu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Gln | Gln | Ile | Phe | Thr | Thr | Lys | Ser | Gln | Glu | Ser | Gln | Gln | Asp | Arg | Glu |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Asn | Arg | Asp | Gln | Lys | Gln | Asp | Arg | Gln | His | Asp | Gly | Gln | His | Gln | Asp |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asp | Asp | Asp | Asp | Gln | Gln | Lys | Gly | Arg | Gly | Lys | Lys | Tyr | Lys | Ser | Lys |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Thr | Ser | Ala | Glu | Ala | Val | Pro | Ala | Asp | Leu | Ser | Val | Ala | His | Leu | Arg |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Tyr | Leu | Asn | Glu | Val | Arg | Gln | Ser | Arg | Glu | Ile | His | Val | Glu | Glu | Glu |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Lys | Thr | Phe | Lys | Lys | Lys | Ala | Gln | Ser | Pro | Met | Ala | Leu | Phe | Ser | Ala |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Pro | Thr | Pro | Pro | Ala | Gly | Phe | Thr | Pro | Ile | Pro | Thr | Pro | Lys | Ile | Glu |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asn | Val | Phe | Ile | Arg | Phe | Met | Lys | Leu | Met | Glu | Arg | Ile | Leu | Gly | Gln |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Ala | Glu | Ala | Glu | Ala | Gln | Glu | Leu | Tyr | Leu | Arg | Val | Lys | Glu | Arg | Thr |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asp | Asn | Val | Asp | Thr | Leu | Met | Leu | Leu | Ile | Ser | Lys | Ile | Asn | Ser | Glu |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Lys | Gly | Ala | Ile | Asp | Trp | Arg | Asp | Asp | Ser | Glu | Met | Lys | Ala | Leu | Val |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Asp | Gln | Ala | Lys | Lys | Leu | Gly | Val | Thr | Ile | Thr | Asp | Thr | Leu | Gln | Trp |  |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Ser | Glu | Glu | Glu | Lys | Lys | Leu | Leu | Lys | Glu | Asn | Ile | Gln | Met | Arg | Lys |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| Glu | Asn | Leu | Glu | Lys | Ile | Thr | Gln | Leu | Glu | Arg | Thr | Asp | Met | Gln | Arg |  |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |

His Leu Gln Glu Val Ser Gln Cys His Gln Ala Arg Ser Asn Ala Leu  
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Lys Leu Leu Lys Glu Leu Met Asp Thr Phe Ile Tyr Asn Leu Arg Pro  
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Ser Val Gly Val Leu Pro Gly Asn Glu Ser Ser Leu Pro Val Gln Arg  
 20 25 30

Glu Tyr Pro Ser Arg Thr Glu Arg Ile Pro Glu Asp Pro Ala Gly Ile  
 35 40 45

Ala Ile His Asp Arg Val Leu Phe Lys Ile Asp Glu Asp Asn Val Val  
 50 55 60

Thr Thr Leu Asp Val Ile Gln Lys Leu Asn Leu Leu Phe Ala Ser Ser  
 65 70 75 80

Tyr Pro Gln Leu Met Asp Ser Tyr Pro Ala Arg Ser Gln Tyr Tyr Thr  
 85 90 95

Ala Met Trp Pro Val Val Leu Glu Ser Val Ile Asp Glu Phe Leu Met  
 100 105 110

Val Ala Asp Ala Lys Thr Lys Lys Ile Gln Val Asp Ser Thr Thr Val  
 115 120 125

Asn Glu Glu Ile Glu Ala Met Phe Gly Arg Asp Leu Ser Pro Leu Tyr  
 130 135 140

Val His Phe Asp Met Thr Pro Glu Asp Val Phe Asn Val Val Asn Arg  
 145 150 155 160

Thr Leu Ile Ala Gln Arg Val Met Gly Met Met Val Arg Ser Lys Val  
 165 170 175

Met Leu Lys Val Thr Pro Gly Lys Ile Arg Glu His Tyr Asn Gln Leu

| 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Glu | Asp | Ala | Ala | Asn | Thr | Thr | Val | Trp | Lys | Tyr | Arg | Val | Val | Thr |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ile | Lys | Ala | Ala | Thr | Glu | Ser | Leu | Ser | Ser | Gln | Ile | Ala | Asp | Lys | Val |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Cys | Ala | Arg | Leu | Asn | Glu | Thr | Gln | Ser | Trp | Asn | Lys | Glu | Arg | Leu | Ser |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Ala | Leu | Thr | Leu | Ser | Gln | Gly | Gly | Gln | Phe | Val | Cys | Ser | Glu | Glu | Phe |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Thr | Arg | Asn | Asp | Lys | Glu | Leu | Ser | Glu | Ala | His | Lys | Met | Glu | Leu | Ser |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Ser | Val | Asn | Tyr | Pro | Gln | Thr | Ile | Cys | Ser | Leu | Pro | Lys | Ala | His | Lys |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Ser | Gly | His | Lys | Leu | Tyr | Val | Leu | Leu | Asp | Lys | Ser | Ala | Met | Ala | Met |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Gln | Pro | Leu | Glu | Glu | Met | Glu | Thr | Gln | Ile | Lys | Gln | Thr | Leu | Phe | Met |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asn | Tyr | Ala | Gly | Thr | Ile | Glu | Ser | Gln | Tyr | Lys | Met | Lys | Leu | Arg | Thr |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Arg | Tyr | Gly | Phe | Asp | Ser | Ser | Thr | Ile | Ala | Lys | Leu | Leu | Ser | Glu | Glu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Ala | Pro | Pro | Leu | Phe | Ser | Leu | Leu |     |     |     |     |     |     |     |     |
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